TELEPHONE SERVICE FOR THE HEARING-IMPAIRED

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

S. 604

TO AMEND THE COMMUNICATIONS ACT OF 1934 TO PROVIDE THAT TELEPHONE RECEIVERS MAY NOT BE SOLD IN INTERSTATE COMMERCE UNLESS THEY ARE MANUFACTURED IN A MANNER WHICH PERMITS THEIR USE BY PERSONS WITH HEARING IMPAIRMENTS

AND

S. 2355

TO AMEND THE COMMUNICATIONS ACT OF 1934 TO PROVIDE THAT PERSONS WITH IMPAIRED HEARING ARE ENSURED REASONABLE ACCESS TO TELEPHONE SERVICE

MAY 6, 1982

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TELEPHONE SERVICE FOR THE HEARING IMPAIRED

THURSDAY, MAY 6, 1982

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
SUBCOMMITTEE ON COMMUNICATIONS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9 a.m., in room 235, Russell Senate Office Building, Hon. Barry Goldwater (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: Dan Phythyon, staff counsel; and Peyton Wynns, minority professional staff member.

OPENING STATEMENT BY SENATOR GOLDWATER

Senator GOLDWATER. The meeting will come to order.

Good morning. This subcommittee and the Senate have recently come to grips with a wide range of extremely complex telecommunications issues. The Senate has done its best to provide a framework for the development of a viable U.S. telecommunications industry of the future. One of our goals was to assure universal telephone service at reasonable cost.

This hearing has been scheduled today to address another issue of universal service, a narrow issue to be true, but one that undoubtedly affects everyone who uses a telephone. Two bills have been introduced, S. 604 and S. 2355, which are different legislative approaches to one problem: Some telephones in this country are not compatible with hearing aids that use inductive receptors. In other words, there are some telephones that hearing-impaired people cannot use. These bills were introduced in an effort to solve this problem and to examine how our Nation's phone system can meet the needs of our hearing-impaired citizens.

I would like to welcome the witnesses who will be appearing today and I hope that you can help to answer the questions that must be answered. We need to know more about the nature and extent of this problem and what really, if anything, the Congress should or could do to resolve it. Now, this is a subject that is quite close to my heart because my wife is hard of hearing and she wears a hearing aid and is able to use the telephone because of the newer type of aid and the fact that they put in an amplifier—and I am sure everybody knows that the phone company will supply these amplified handsets. I can literally put the phone here and you can hear the conversation back there.

Now, I realize that some hearing aids will not allow that to be done. But I have talked to several telephone companies and every one I have talked to is very eager to do something about this.

And already, as you know, the companies are improving the public telephones, the pay phones, so that very shortly they will all be equipped to handle hearing aid customers. You can tell them by where the cord goes in the handset. There is a blue grommet, so if you are hard of hearing look for a blue grommet and have your money ready.

[The bills follow:]

II

97TH CONGRESS
1ST SESSION

S. 604

To amend the Communications Act of 1934 to provide that telephone receivers may not be sold in interstate commerce unless they are manufactured in a manner which permits their use by persons with hearing impairments.

IN THE SENATE OF THE UNITED STATES

MARCH 3 (legislative day, FEBRUARY 16), 1981

Mr. MATHIAS introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

---

A BILL

To amend the Communications Act of 1934 to provide that telephone receivers may not be sold in interstate commerce unless they are manufactured in a manner which permits their use by persons with hearing impairments.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Congress hereby finds that—

(1) all persons subscribing to or otherwise receiving telephone service in the Nation should receive the best service which is technologically possible;

(2) currently available technology is capable of providing telephone service to those individuals who, because of hearing impairments, require telephone reception by means of hearing aids with induction coils or other inductive receptors; and

(3) modifications in current telephone receiver design and manufacture should be made in order to accommodate the needs of individuals with hearing impairments.

SEC. 2. Title II of the Communications Act of 1934 (47 U.S.C. 201 et seq.) is amended by adding at the end thereof the following new section:

"REGULATION OF TELEPHONE RECEIVER DESIGN

"SEC. 225. (a) It shall be unlawful for any person to manufacture, import into the United States, install, offer for sale, offer for rent, offer for lease, or otherwise distribute any telephone receiver or other similar telephone equipment, for use in connection with any interstate or foreign communication, unless such receiver is designed and manufactured in a manner which permits telephone reception, through the use of such receiver by means of any hearing aid which uses an induction coil or any other inductive receptor.

"(b) Any person who violates the provisions of this section shall be fined not more than $5,000. Any person who is

convicted of a second or subsequent offense punishable under this subsection shall be fined not more than $10,000.".

SEC. 3. The amendment made in section 2 shall apply only with respect to telephone receivers and other such similar telephone equipment manufactured one year after the date of the enactment of this Act.

95-636 O—82——2

II

97TH CONGRESS
2D SESSION

S. 2355

To amend the Communications Act of 1934 to provide that persons with impaired hearing are ensured reasonable access to telephone service.

IN THE SENATE OF THE UNITED STATES

APRIL 1 (legislative day, FEBRUARY 22), 1982

Mr. CANNON (for himself, Mr. GOLDWATER, and Mr. RIEGLE) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

---

A BILL

To amend the Communications Act of 1934 to provide that persons with impaired hearing are ensured reasonable access to telephone service.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Congress hereby finds that—

(1) all persons subscribing to or otherwise receiving telephone service in the Nation should receive the best service which is technologically possible;

(2) currently available technology is capable of providing telephone service to some of those individuals who, because of hearing impairments, require telephone

reception by means of hearing aids with induction coils, or other inductive receptors;

(3) the lack of technical standards ensuring compatibility between hearing aids and telephones has prevented receipt of the best service which is technologically possible; and

(4) adoption of technical standards is required in order to ensure compatibility between telephones and hearing aids, thereby accommodating the needs of individuals with hearing impairments.

SEC. 2. Title II of the Communications Act of 1934 (47 U.S.C. 201 et seq.) is amended by adding at the end thereof the following new section:

"TELEPHONE SERVICE TO PERSONS WITH IMPAIRED HEARING

"SEC. 225. (a) The Commission shall establish such regulations as are necessary to ensure reasonable access to telephone service by persons with impaired hearing.

"(b) In ensuring such access, the Commission shall require that coin-operated public telephones be designed, manufactured, and operated so as to be capable of coupling with hearing aids through the use of an induction coil or other inductive receptor. The Commission may also require that other telephones frequently used by the public (such as telephones in hospital rooms), or provided for emergency access

(such as telephones in elevators), be similarly designed, manufactured, and operated.

"(c) The Commission may establish such technical standards as are required in order to ensure compatibility between telephones and hearing aids.

"(d) The Commission shall establish such requirements for the labeling of equipment and packaging materials for equipment as are needed to provide adequate information to consumers on the compatibility between telephones and hearing aids.

"(e) In any rulemaking to implement the provisions of this section, the Commission shall specifically consider the costs and benefits to all telephone users, including persons with and without hearing impairments. The Commission shall ensure that regulations adopted to implement this section do not discourage or impair the development of new technology.".

○

Senator GOLDWATER. Senator Mathias was to be the first witness, but Senators are never on time. Is Mr. Kestenbaum here? All right, we will let you testify. So come up and take a seat.

What I am about to say goes for all witnesses. It is not necessary to read your entire statement if you do not want to. You can submit it and we will print the whole thing in the record as if you read it, and then you can discuss it as you wish. This we do in the interest of time.

We have the armed services bill before the Senate this morning and I am a member of that committee and I might have to go to work there, but I do not believe so. And these little lights up here, the green light, yellow light, and red light, are our way of timing your 5 minutes of testimony. Now, we are not too tough about it, but do not abuse it too much. When the yellow light comes on, get ready to conclude, and when the red light comes on you ought to be through. If you are not, I will have trouble hearing, too.

STATEMENT OF LEON M. KESTENBAUM, DEPUTY CHIEF, POLICY, COMMON CARRIER BUREAU, FEDERAL COMMUNICATIONS COMMISSION, ACCOMPANIED BY JANICE OBUCHOWSKI, LEGAL ASSISTANT

Mr. KESTENBAUM. Thank you, Senator.

With me today is Janice Obuchowski who is a legal assistant to the Chief of the Common Carrier Bureau.

I would like to thank you for extending this invitation to me to testify concerning S. 604 and S. 2355. There can be no dispute about the importance of the problems addressed in these bills and the need to take full reasonable steps to facilitate use of the telephone by the hearing impaired.

Before analyzing and commenting on the two bills now before the Senate, I would mention that the FCC had undertaken an inquiry, Docket 78-50, to determine whether Federal regulatory action is required to improve telecommunications services for both the deaf and the hearing impaired. This inquiry has not yet been completed.

The views expressed in my testimony are of course not intended to in any way prejudge the FCC's decisions in Docket 78-50.

The comments in Docket 78-50 and earlier testimony submitted to Congress reveal much disagreement, both factual and philosophical, between the various organizations representing the hearing impaired on the one hand and the telephone company and electronic equipment manufacturers on the other. One idea, however, in which there does appear to be complete agreement is a proposal that all coin-operated telephones should be hearing aid compatible. The Commission has been informed that A.T. & T., GTE, and Continental have all undertaken to assure such compatibility.

In my view there can be little doubt as to the need for coin telephones to be made compatible with hearing aid use. Compatibility is required not only as a matter of convenience, but of safety as well. I further believe that such compatibility should be extended to all noncoin phones which are used by the public for emergency situations, such as in elevators and which report fire alarms.

On the other hand, it would appear there is less need to insure that all residential phones be compatible with hearing aid use. The hearing-impaired would normally not have occasion to seek access to the vast majority of residential phones. In such circumstances we must consider whether there is a need to assure the hearing aid compatibility of all residential phones and whether such need might be overridden by the right of residential users to obtain any equipment they please so long as it does not harm the telephone network.

Thus it might be sufficient if hearing aid compatible phones were simply made available to those who wish to obtain them, rather than being legislatively mandated for the general population of subscribers who have no special use for such phones.

Apart from coin telephones and telephones for emergency use, where the need for compatibility would seem almost self-evident, and residential phones, where such need as a general matter is certainly less compelling, there are a number of other categories of telephone use where the needs of the hearing impaired would seem to fall somewhere in between.

At some locations, such as hospitals, hotels and motels and dormitories, phones are installed for the use of the public and not for the subscriber paying directly for the service. If the costs were reasonable, it would clearly be desirable to make these phones compatible with hearing aid use.

Given the gradation of need for compatibility from coin telephones and emergency telephones at one end of the spectrum to residential phones on the other, the approach adopted in S. 604, which would ban all noncompatible instruments, seems overly broad. I believe that it would be preferable to adopt the approach in S. 2355 and in each case where restrictions are contemplated on the manufacture or sale of telephones to weigh the costs of such restrictions against the benefits which can be expected to result for the hearing impaired.

At the present it would seem extremely difficult to know where to draw the line in placing any restrictions on noncompatible equipment. The reason for this is that most of the facts upon which any cost benefit analysis would rely are unknown or in dispute.

For example, we do not know how many hearing-impaired people actually use a hearing aid to listen to the telephone by means of inductive coupling. We do not have reliable information. We do not have reliable information about the efficacy or practicality of using external adapters to modify noncompatible instruments to permit inductive coupling. We do not know the cost of imposing and enforcing a ban on the sale of noncompatible equipment.

I have concluded that careful investigation of all disputed questions of fact is required before a complete ban on noncompatible telephones could be imposed. I also share the concern of the sponsors of S. 2355 that the adoption of a magnetic leaker standard as required by S. 604 would inhibit the development of more efficient telephone receivers.

One further problem here concerns the advisability of a role assigned to the FCC in enforcing S. 640 and S. 2355. Those bills deal with terminal equipment. They are not concerned with the regulation of communications utility service. The FCC has been charged

in the Communications Act of 1934 with regulating communications utility service, and we have determined recently, in the second computer inquiry, that telephones themselves were not part of this service.

In view of these facts, the committee might want to consider the assignment of an administrative role to another Federal agency which perhaps has more experience in dealing with programs of this type.

Thank you.

[The statement follows:]

STATEMENT OF LEON M. KESTENBAUM, DEPUTY CHIEF, POLICY, COMMON CARRIER BUREAU, FEDERAL COMMUNICATIONS COMMISSION

Mr. Chairman and members of the committee, thank you for extending this invitation to me to testify concerning S. 604 and S. 2355. I think there can be no disagreement about the importance of the problems addressed in S. 604 and S. 2355 and the need to take all reasonable steps to facilitate use of the telephone by the hearing impaired.

Before analyzing and commenting on the two bills now before the Senate, I would mention that the FCC has undertaken an inquiry (CC Docket No. 78–50) to determine whether federal regulatory action is required to improve telecommunications services for both the deaf and the hearing impaired. In this docket the Commission intended to offer a forum in which communications common carriers and communications equipment vendors could come to better understand the communications needs of the hearing impaired and the deaf community. The Commission also sought to generate sufficient information to assist in formulating any possible policies or rules governing telecommunications service for the deaf and hearing impaired. Among the issues being considered in Docket No. 78–50 are: (1) whether magnetic leakage standards should be established to make telephones compatible with existing hearing aids; and (2) whether disclosure or labeling requirement should be established to advise subscribers or users that certain telephones are not compatible with existing hearing aids.

This inquiry has not yet been completed. The views expressed in this testimony are, of course, not intended to in any way prejudge, or even foreshadow, the FCC's decision in Docket No. 78–50. In fact, I have no way of knowing at this time what the Commission will ultimately decide in that proceeding. Therefore, to the extent that any analysis here of S. 604 and S. 2355 touches upon issues similar to those raised in Docket 78–50, my views can in no way be regarded as binding on the Commission or affecting its decision in that docket.

Some improvements in telecommunications service for the deaf and hearing impaired have been made since the Commission instituted CC Docket No. 78–50. On August 20, 1981, the Common Carrier Bureau granted AT & T special permission to revise its tariff on normal statutory notice, without supporting cost data, to provide reduced rates for hearing or speech impaired customers on interstate station-to-station calls which do not require intervention of an operator. In this tariff revision AT & T proposes that calls for which day rates are normally charged be priced at the evening rate and that calls for which evening rates are normally charged be priced at the night rate. This rate reduction, according to AT & T, is a way to mitigate the higher expense of toll network use incurred by deaf customers. These customers, who communicate by teletypewriter (TTY), must maintain the toll system connection by TTYs while typing messages. Ordinarily, the message can be conveyed orally faster than it can be typed. Therefore, the time taken and hence the toll charge, is greater for the same message when conveyed via TTY when the same rates are applied to both communications. The AT & T proposed rate reduction for deaf customers alleviates this cost burden.

In a step toward better serving the hearing impaired, the Commission released its Report and Order in PR Docket 79–315 on February 26, 1981. Here the Commission amended its rules to provide two frequencies for paging and response for the hearing impaired, blind and physically disabled.

The Common Carrier Bureau is in the process of assessing the record in CC Docket No. 78–50 in light of these developments and of its decision in the Second Computer Inquiry. In that decision the commission decided that customer premises equipment charges will not be subject to regulation by this Commission after an appropriate transition period. The Common Carrier Bureau plans to bring issues

raised in CC Docket No. 78-50 and subsequent developments to the Commission for its consideration in the near future.

The comments in Docket 78-50 and testimony submitted to Congress when it was considering H.R. 5022 (a predecessor of S. 604) revealed much disagreement—both factual and philosophical—between the various organizations representing the hearing imparied, on the one hand, and the telephone companies and electronic equipment manufacturers, on the other. One idea, however, for which there does appear to be complete agreement, is the proposal that all coin operated telephones should be hearing aid compatible. The Commission has been informed that AT & T, GTE, and Continental have all undertaken to insure such compatibility and that in the case of AT & T (and perhaps other carriers as well) all coin telephones are now equipped with special coils to permit inductive coupling for hearing aid users. These specially equipped telephones are known as "blue grommet" telephones. In my view there can be little douibt as to the need for coin telephones to be made compatible with hearing aid use. Such compatibility is required not only as a matter of convenience but of safety as well. I futher believe that such compatibility should be extended to all non-coin phones which are used by the public in emergency situations. Examples of such situations would include phones in elevators and phones used to transmit fire alarms.

On the other hand, there would appear to be less need to insure that all residential phones be compatible with hearing aid use. The use of residential phones by the hearing impaired would probably be limited to their own homes or to the homes of friends or relatives. They would normally not have access to and would not use the vast majority of residential phones. In such circumstances we must consider whether there is need to insure the hearing aid compatibility of all residential phones and whether such need might be overidden by the right of residential users to obtain and utilize any equipment they please so long as it does not harm the telephone network. Thus, it might be sufficient if hearing aid compatible phones were simply made available for those who wish to obtain them rather than being legislatively mandated for the general population of subscribers who have no special use for such phones.

Apart from coin telephones and telephones for emergency use (where the need for compatibility would seem almost self-evident) and residential phones (where such need as a general matter is certainly less compelling), there are a number of other categories of telephone use where the needs of the hearing impaired would seem to fall somewhere in between. In some locations such as hospitals, hotels and motels, and dormitories, phones are installed for the use of the public and not the subscriber paying directly for the service. If the cost were reasonable, it would clearly be desirable to make these phones compatible with hearing aid use so that hearing impaired persons are not inconvenienced when they have to spend time away from home.

Finally, there is the question of the need to insure hearing aid compatibility with telephones in the workplace. I expect that the circumstances one finds in working situtations would be quite varied. In some cases it might be sufficient if a hearing aid person were provided with a compatible phone at his or her workplace. In other instances it might be extremely important or, at least, desirable for all telephones at a business establishment to be compatible with the needs of hearing impaired employees.

Given these differences, and the gradation of need for compatibility from coin telephone and emergency telephones, at one end of the spectrum, to residential phones, on the other, the approach adapted in S. 604, which would ban all non-compatible instruments, seems overly broad. I believe that it would be preferrable to adopt the approach in S. 2355 and, in each case where restrictions are contemplated on the manufacture or sale of telephones, to weigh the costs of such restrictions against the benefits which can be expected to result for the hearing impaired.

At the present it would seem extremely difficult to know where to draw the line in placing any restrictions on non-compatible equipment. The reason for this is that most of the facts upon which any cost-benefit analysis would rely seem to be unknown or in dispute. For example:

(1) We do not know how many hearing impaired people actually use their hearing aids to listen to the telephone by means of inductive coupling. Many hearing aids are not equipped with an inductive coupling or "telecoil" position and the view has been expressed by some that even when this feature is available it is not always used. Estimates of the number of hearing impaired people who use the phone through inductive coupling vary from one half million to over two million. After looking at the comments in Docket No. 78-50, it seems to me that we simply do not

know what the correct numbers are and that in order to accurately measure the benefits of any large scale restrictions additional information must be developed.

(2) We do not have reliable information about the efficacy or practicality of using external adapters to modify noncompatible instruments to permit inductive coupling. There have been complaints in the past that the adapters provided by telephone companies did not function in a satisfactory fashion. It may be, however, that any technical problems with the adapters could be overcome. Indeed, it may be that such problems have already been overcome and that the adapters now available are functioning correctly. AT&T claims that it has available a lightweight adapter that can be strapped to a telephone receiver to permit inductive coupling and that it is selling such a device on a non-profit basis for only $15. Before adopting a more expensive solution, and one that may have adverse impact on the rights of the non-hearing impaired, it might be adviseable to try to determine with some certainty whether the compatibility problems faced by the hearing impaired can be solved either now or in the near future through the use of adapters.

(3) We do not know the cost of imposing a ban on the sale of non-compatible equipment. There is some evidence in Docket 78–50 that the lighter, more rugged equipment introduced into the marketplace within the last few years does not produce a sufficient electromagnetic field so as to allow inductive coupling. Whether magnetic leakage can be increased without otherwise changing or diminishing the advantages of such telephones is unknown to me. How much it would cost to modify such telephones by adding a special coil so that inductive coupling would be possible is also not a matter of record. The cost of adding such a coil varies from almost nothing to over $2.00 per instrument depending upon whose views one wishes to accept.

The costs of compatibility are not so high as to prevent the modification of a limited number of phones such as coin telephones or emergency telephones. However, if most of the 170 million phones in the country have to be modified, or if all new phones must be modified, the total price could be quite steep even though the cost per phone is relatively inexpensive. It would make sense to impose a requirement for widespread modification only if commensurate benefits for the hearing impaired were expected.

Until questions such as these are answered, it would be very difficult to get any firm idea of the costs and benefits which would result from a ban upon non-compatible telephones. Careful investigation of all disputed questions of fact is required. Moreover, whatever the present costs and benefits are, they would almost certainly change over time. Thus, the cost of producing telephones so that they are compatible with the needs of the hearing impaired can be expected to be quite different (perhaps higher, perhaps lower) with an all-digital telephone system. Equally important, assuming that they are not already available, adapters may be refined so that they are cheap, light-weight, easy to use, and effective. This would eliminate the need to make all phones capable of operating through inductive coupling.

In short, because of the complexities discussed here and the shifting nature of any cost-benefit analysis., I believe that the more flexible approach contained in S. 2355 is to be preferred over a flat ban on all incompatible telephone receivers. In my view we do not have sufficient facts to enable the Congress to determine that the complete prohibition of non-compatible telephones would be in the public interest. I also share the concern of the sponsors of S. 2355 that the adoption of a magnetic leakage standard as required by S. 604 would inhibit the development of new and more efficient telephone receivers.

One further problem here concerns the advisibility of the role assigned to the FCC in enforcing S. 604 and S. 2355. The FCC has been charged in the Communications Act of 1934 with regulating communications utility service. As already noted, in its recent Second Computer Inquiry decision the Commission determined that the provision of telephones and other terminal equipment was not really part of such utility service and that it should be provided in an open market without any regulatory constraints. In other words, telephones would be treated the same as gas and electric appliances such as ranges, toasters, light bulbs and furnaces, which are now provided separate from gas and electric utility service.

In the recent proposed modification of the AT&T consent decree, AT&T has agreed with the Justice Department that the local telephone companies which are to be divested by AT&T would no longer provide any telephone instruments or other terminal equipment. Bills in both houses of Congress have also proposed that terminal equipment be provided on an unregulated basis.

Even when telephones were provided as part of utility service, the FCC was never involved in setting standards for acceptable terminal equipment or in consumer information labeling. Its role has been limited to ensuring that equipment intercon-

nected with the network does not do harm to the network. Its technical standards for telephones, set forth in Part 68 of its Rules, are narrowly directed to this end. S. 604 and S. 2355 impose restrictions upon or regulate the telephone instruments themselves. S. 2355 also imposes labeling requirements. They are not concerned with the regulation of communications utility service.

Under these circumstances, the assignment of a role here to the FCC is at least questionable. The Committee may want to consider the assignment of an administrative role to another federal agency which has more experience in dealing with this type of program.

The FCC staff is certainly amenable to conveying to you information which we have gathered in CC Docket No. 78–50 on ways to afford improved telephone service for the deaf and hearing impaired. The staff also is available to assist you in any other way.

Thank you.

Senator GOLDWATER. Thank you very much, Mr. Kestenbaum. I am going to ask if you would not mind just sitting aside for a moment, because Senator Mathias has arrived, and we will ask you a few questions after the Senator is finished.

Senator Mathias, would you please assume the position?

STATEMENT OF HON. CHARLES McC. MATHIAS, JR., U.S. SENATOR FROM MARYLAND

Senator MATHIAS. Thank you, Mr. Chairman.

Senator GOLDWATER. It is a pleasure to have you with us this morning, and as the author of one of these very important bills you can testify as you want, just so you do not go over 5 minutes.

Senator MATHIAS. Mr. Chairman, I would hope to consume less. With your permission, I will submit my statement for the record and just touch on the principal points.

The bill does not call for retrofitting. Retrofitting would of course involve more expense and a more complicated procedure; it does not require that.

I believe it to be cost effective. The cost of compatibility of new equipment—and I am only talking about new equipment—is about a penny per year per phone. This is not an enormous burden on the telephone users.

The bill avoids the temptation to extend the regulatory hands of the FCC. We will not feed the appetite of the regulatory agencies by this bill.

The bill does not require new research or new testing in some new, unknown or expensive technology. Although you and I, Mr. Chairman, have never shrunk from new technologies and have always been willing to experiment with them, this bill will not require them. The telephone industry already uses the necessary technologies in 80 percent of the equipment that is now deployed.

Briefly, this legislation would provide great assistance for millions of Americans who have some hearing impairment at a relatively small cost and a relatively small effort by the companies.

I sometimes think you can measure a society by the care it takes for the people who have problems of one kind or another. Some of the greatest monuments in America are those curbstones that are lowered so that people who have handicaps can get over the curbs a little easier. We as a country are willing to take that effort and to bear that small expense to make it easier for the least able among us. I think this legislation is another expression of that kind of concern and it would be a step forward for American society.

Senator GOLDWATER. Well, I thank you. And I know that you will be interested to learn, if you do not already know, that since these bills have been introduced the staff and myself have been talking with the telephone companies from the big one on down, and I think they have already made remarkable headway in this field at very, very little cost.

I related before you came in that my wife is very hard of hearing and an amplifier provided just by request has solved her problem. I know that will not work in every case.

I just want to ask you one little question: Do you think the FCC should ever get into the business of having jurisdiction over hearing aids?

Senator MATHIAS. I think that is stretching their jurisdiction pretty far.

Senator GOLDWATER. Well, this would probably involve the type of hearing aid, with the induction coil because that has some problem with the telephones, although the telephone company with its new system has overcome the biggest problem. I merely ask you that because I did not think we would ever get that far.

Senator MATHIAS. I think that is stretching the concept of interstate commerce about as far as possible.

Senator GOLDWATER. Well, we want to thank you for coming, and I think I can express the thanks of all people in the country who are hard of hearing for the introduction of this bill.

Senator MATHIAS. I am encouraged by your news of your negotiations with the principal companies involved here. But I am also reminded of the words of my favorite philosopher, Dr. Samuel Johnson. He said that nothing concentrates the mind so much as the prospect of being hanged.

Senator GOLDWATER. I think I get you.

Thank you very much.

[The statement follows:]

STATEMENT OF HON. CHARLES MCC. MATHIAS, JR., U.S. SENATOR FROM MARYLAND

Thank you for the opportunity to testify in support of my bill to assure the compatibility of telephones with hearing aids.

Mr. Chairman, we are a nation with an advanced case of telephonitis. We Americans use 180 million telephones to go about our daily work, arrange our family lives and cope with unexpected events. Most of us could not carry on in our homes, at our jobs or anywhere else for as much as one day without using a telephone.

For Americans with hearing aids, however, one out of five of those telephones does not work. And every day more telephones are installed in homes, businesses, hospitals and public accomodations with receivers that are useless to hearing aid users.

The incompatible telephones differ from other phones in one significant aspect. They do not produce an electromagnetic signal that is compatible with the magnetic telephone pick-ups built into most hearing aids. Hearing-impaired people are thus denied access to those telephones.

The problem is serious because using the telephone has become an essential part of modern life. It is essential to find a job and keep a job; it is essential to maintain normal contact with other people; it is essential for emergency protection; and it is essential for mobility.

The problem also affects friends, families and coworkers of the hearing-impaired who must communicate with them.

The compatibility of telephone equipment with hearing aids is especially important to the many hearing-impaired elderly who are homebound and heavily dependent upon the telephone. Without compatible phone units, communication for person-

al, social and business purposes—not to mention vital health and emergency needs—becomes impossible.

Today Congress's Office of Technology Assessment is publishing an extensive, two-year study entitled "Technology and Handicapped People." The report points out that: "Increasingly, the public is expressing disappointment and dissatisfaction with the rate of application of research results. OTA researchers were frequently told that existing technologies could be made much more widely available. Yet, currently only a fraction of disabled individuals are adequately benefitting from this capability."

My bill offers a reasonable and financially prudent approach to correcting this problem.

The bill does not call for retrofitting the incompatible receivers now in place. It affects only new telephones and would simply assure that all new telephone receivers be compatible with hearing aids.

The legislation is cost-effective. Testimony in 1980 before the House Commerce Subcommittee on Communications showed that compatibility is not costly. Figures presented by the industry showed that the additional cost for universal telephone compatibility would be just over one penny per year per telephone.

My bill sidesteps the temptation to impose the heavy, slow and uncertain regulatory hands of the Federal Communications Commission. This legislation does not feed the regulatory appetites of the agencies downtown which the Administration, Congress and industry want so much to thin down.

Most importantly, my bill does not require research and testing in new, expensive technology. The telephone industry already uses the technology in the 80 percent of telephones that are compatible. Starting one year after enactment, my bill—through routine attrition and over time—would simply upgrade the other 20 percent of telephones to the same high performance level.

The new Office of Technology Assessment study documents that with wider diffusion of technology not all disabilities need to handicap people. It says: "A deaf person will not be handicapped in a job or in social functions if telecommunications devices are available and permit the carrying out of the needed functions of communication. Such prevention is not free; it may require the allocation of extensive resources in some cases. In others it could be relatively inexpensive, such as modifying telephone receivers to make them compatible with hearing aids."

By using the technology that allows hearing-impaired people to make full use of the telephone, the entire nation could benefit from their talents and abilities.

It is well known that the telephone is a byproduct of Alexander Graham Bell's search for a device to help the hearing-impaired. It is long past time to bring full and assured access to telephones into the lives of people who rely on hearing aids.

Enactment of my bill would make the telephone an instrument of opportunity for disabled Americans instead of a handicap to effective communication and participation in everyday life.

Thank you.

Senator GOLDWATER. Mr. Kestenbaum, would you resume the stand, please. Just a couple of questions.

Mr. Kestenbaum, as you have noted under the 1934 act the FCC has regulated equipment only to the extent to allow for technical compatibility and to prevent harm to the network. If S. 2355 expands the FCC's jurisdiction, is additional language needed in the bill to clarify the extent of this expansion?

Mr. KESTENBAUM. Yes, I think so, Senator. I think we would normally not have jurisdiction over this sort of thing.

Senator GOLDWATER. If you would like, would you submit your suggestions so that the staff can have the benefit of these?

Mr. KESTENBAUM. Certainly.

Senator GOLDWATER. Your testimony states that one purpose of Docket 78-50 was to generate information, and you have noted some areas in which information is still needed. Are concrete facts likely to come out of Docket 78-50, and when? And if not, what further inquiry is needed in these areas?

Mr. KESTENBAUM. Well, I think there has been some progress made in Docket 78-50. I think some information has been devel-

oped within the docket. But there still are disputed issues of fact and further investigation will probably be necessary for some purposes.

Senator GOLDWATER. Are S. 604 and S. 2355 inconsistent with congressional and FCC efforts to deregulate terminal equipment?

Mr. KESTENBAUM. Well, this is a special problem and legislation of this kind will be designed to provide for particular regulation over this equipment for a specific need. I do not think it would be inconsistent with the general program in Computer 2, which made it clear that absent special requirements that equipment should be provided on the open market free of regulation.

You are dealing here with a specific problem where you would in a sense provide for some regulation of equipment, but only insofar as this specific problem requires it.

Senator GOLDWATER. Well, as you know, under court rulings the manufacture of telephone equipment is no longer only the prerogative of the telephone companies. You can buy any piece of equipment of any type.

Now, in your opinion will these other companies, including many in Japan and Taiwan, voluntarily follow the suggestions of any legislation that we might pass, or will additional regulations be needed for them?

Mr. KESTENBAUM. I am not certain of that, Senator. But I think you are quite correct in pointing out that this is not a telephone company problem per se. Anybody can provide equipment and if you are going to have regulation on the sale or manufacture of equipment this would be the regulation of a manufacturing industry rather than a public utility enterprise.

Senator GOLDWATER. Well, it will take some time to determine that, will it not?

Mr. KESTENBAUM. Yes, perhaps there would be some question as to how easy it would be to assure compliance. But I do not know specifically how easy that would be. It seems to me like the automobile manufacturing thing where we required them to put in certain pollution things and safety devices. You would have to go to the manufacturer and tell them, you cannot sell these phones in the United States unless you modify them as we have required.

Senator GOLDWATER. Well, I think it would be a pretty good idea to have the FCC run a check through their technical offices on the compatibility of this foreign equipment. And as you know, there are tons of it. I have a feeling they all pretty much comply. But I think we will ask the FCC to start a check on that just to see if we cannot make it possible for everybody to comply.

I want to thank both of you for being here today, and any time you have something to add just give us a whistle.

Mr. KESTENBAUM. Thank you, sir.

Senator GOLDWATER. Now, we have today two different panels. I will ask the first panel to come up, and I will read the names: Mr. David Saks, the director of the Organization for Use of the Telephone, with Ms. Edana Lee Schmidt, the past president; Dr. Steven C. White, Government Affairs Department, American Speech-Language-Hearing Association; Dr. Charles L. Jackson, president, Shooshan and Jackson, Inc.; Mr. Stuart Brackney, executive secretary, Arizona Council for the Deaf. Welcome.

I think you heard about these little lights up here. Anything that you have written that you want to have put in the record, it will be put in the record as if read and then you can comment, or you can read the entire statement. And I think we will start a little backwards here and ask Mr. Brackney to lead off.

STATEMENTS OF DAVID SAKS, DIRECTOR, ORGANIZATION FOR USE OF THE TELEPHONE, INC., ACCOMPANIED BY EDANA LEE SCHMIDT, PAST PRESIDENT, OUT; DR. STEVEN C. WHITE, GOVERNMENT AFFAIRS DEPARTMENT, AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION; DR. CHARLES L. JACKSON, PRESIDENT, SHOOSHAN AND JACKSON, INC.; AND STUART R. BRACKNEY, EXECUTIVE SECRETARY, ARIZONA COUNCIL FOR THE DEAF

Mr. BRACKNEY. Mr. Chairman, as suggested, I will not read the entire statement that I prepared and forwarded to staff, but rather point out some highlights that concern me.

As you know, as the executive secretary of the Arizona Council for the Deaf, I would like to make a comparison with some of the comments that are being made in testimony which I have reviewed and that you will have submitted to the committee today. The comparison would be that there is a term being used by the proponents of both of these bills and that is the term "telephone deaf." I would like to eliminate the term "telephone" and refer to "deaf" and see if I can create an analogy that will be sufficient.

My dealings with deaf people in the State of Arizona indicate that their basic problem throughout life are two things: frustration in reference to time and communication. The communication is somewhat difficult to understand because of the fact that we are not always all that good at it. Some of us are poor listeners and some of us are poor in the ways of extending information. In other words we are not too articulate.

I find that that is an immense problem for deaf individuals from the day they are born until they die. When one examines that time line, one understands that one has a problem in communicating with their parents, one is oftentimes labeled mentally retarded during the school system because of not offering answers or questions in the classroom situation.

One is identified as socially inappropriate because of behavior in public because of one's failure to communicate effectively and timely. And then, one oftentimes finds themselves in the position of not being able to obtain the correct employment and/or additional training for that failure to communicate. And then one is often in a bind, if you will, to obtain the services of the community.

In flying out here from Phoenix, I was able to pick up a local newspaper in Phoenix and the Washington Post. When you look at the advertisements in those newspapers, you identify quite often that one calls for an appointment, one calls for additional information. We are talking about employment or goods or services.

Then one finds oneself as a senior citizen, of which Arizona has 11.3 percent of our total population—senior citizens, that is an individual 65 or above. Over half of those people have a profound hear-

ing loss. Arizona's senior citizen population is on par with the Nation. The Nation's 65 or above population is also 11.3 percent.

I think Senator Mathias might have wanted to say one additional thing about the millions of people that this particular bill would be assisting. I propose that it will not just assist hearing impaired people or, back to the phrase, telephone deaf. I propose that it will assist millions of others because of the need to communicate with the rest of our society. Our society has a tendency to demand from us timely, accurate response and communication input.

I feel that both of these bills are addressing that issue for hearing impaired people. The underlying thing is, it will not just provide assistance to the hearing impaired themselves. I find that S. 2355, however, somewhat limits itself. Regardless of the cost factors, and the research that will be identified to you in other testimony, it identifies that we will make compatible those phones which you, Senator, have already pointed out in the most part are already compatible with the blue grommet in public phones.

However, myself as an individual, I do not find myself being required to use the public phone as often as I am required to use a phone in someone else's office, the office where I want to work or the home that I happen to be in or that I am going to, in addition to my own.

I would suggest that in looking at S. 604, that it more accurately addresses that problem of being deaf in the sense that we have individuals who without the hearing aid are deaf, but with the hearing aid and without a telephone are socially and culturally deaf. We ridicule quite often individuals who are unaware of what is going on around them. We found them as academically nonastute to the social problems, as lackadaisical on the job because they are not understanding the new rules and regulations.

I personally believe, as a professional who works with deaf people, that we are talking about an extension of that population when we talk about individuals who wear a hearing aid, who cannot articulate on the telephone because that particular unit is not compatible with their unit.

I would question in my own mind when Senator Mathias is addressing the curbs at a low cost. I would guess that the total cost of one achieving life-fulfilling activity is heavily dependent, and probably more so on the telephone, as the telephone industry and many of us already know.

With that, I do not see the difference between the deaf person that I work with and a hearing impaired person, if you will, who is required to use a hearing aid, but cannot articulate the arrangements for his father's funeral 1,000 miles away, or in an application for a job or responding to a Government agency who says, call before 5 p.m. or you will lose your food stamps.

To me Charlie Smith said it quite well; a man who lived to be 136. He said, it is not how much you know, it is not how much you do not know that is all that important; the critical thing in today's world is how well you can say both of those things. I think that S. 604 will assist that process for millions of people.

Thank you.

[The statement follows:]

STATEMENT OF STUART R. BRACKNEY, EXECUTIVE SECRETARY, ARIZONA COUNCIL FOR THE DEAF

Mr. Chairman and members of the committee, the following comments are being resectively submitted for your consideration with reference to S. 604 and S. 2355. As you know, both of these bills are an attempt to access telecommunications for those persons who use hearing aids.

As the Executive Secretary of the Arizona Council for the Deaf it is most appropriate that I use my experiences from Arizona to address this very critical problem. In 1980 the U.S. Census Department identified 306,971 persons who are over the age of sixty five, living in Arizona. This figure represents 11.3 percent of the total population of Arizona. On a national basis the Census Department tells us that 11.3 percent of our countries population is over sixty five, therefore Arizona can be used as a true representation of our countries demographic picture.

U.S. Department of Health sources tell us that over fifty percent of those persons over sixty five have a severe hearing loss, thus require some kind of assistance, often this is in the form of a hearing aid. One can easily see that approximately five percent of our older Americans need a hearing aid. In addition to this group there are millions of others, of younger age who are using hearing aids due to rapid onset of a hearing loss.

Both of these groups, the elderly and others who use a hearing aid, need to effectively communicate with their society. That fact is represented by the fact that you have both of these bills being submitted for review. The major problem that the hearing impaired who use hearing aids confront is in reference to the modern telecommunications devices they encounter. They are not all compatible with their aids, thus they are unable to freely use the millions of telephones in use throughout our country.

Returning to Arizona for a moment. We have approximately two million telephones in service in our state. Those phones are serviced by eleven telephone companies. You have already seen figures on the number of private telephones that are presently in service that are compatible with hearing aids. Most of these smaller companies do not provide any special equipment to the customer which will make his or her phone compatible with a hearing aid. One very critical point that must be understood by you when considering both of these bills is this, almost all of the public pay telephones (over 80 percent) are compatible with hearing aids. With that fact in mind, one can see the minimum impact of S. 2355, as the major problem facing hearing aid users is with reference to the millions of private and business phones in use.

It is my opinion that S. 604 most appropriately addresses the problem hearing aid users face today. Some people may contend that this is not a significant problem. I would disagree. In this world of ever increasing demands on our individual citizens, telecommunications has become one of the most effective means for people to resolve problems and share information. Let me be more specific. When you, members of Congress, take a close look at your job description, daily work activities, you quickly see that the telephone plays a critical role in your success. I contend that without the telephone you would quickly see the frustrations experienced by millions of hearing aid users every day.

When you cannot call your employer to inform him you are ill, contact your doctor for medical assistance, respond to a job advertisement, or express your love to a family member over the phone, your life is disrupted. Whey?

I believe that the hearing impaired persons of our country deserve the right to know the answer to that question and how best to resolve this problem. It is through S. 604 that you will find the answer. With over 60 percent of the hearing aids manufactured today equiped with the telephone switch, these people need total access to the phone system and that begins with the phone companies using the present technology to adapt teir phones. I do not believe we are asking the phone manufacturers to take any drastic action with reference to their costs or providing any inconvenience to other telephone users.

I would caution you when considering S. 604 from looking only at the number of hearing aid users in this country. This is because when S. 604 is passed it will not just assist the hearing impaired, but rather millions of other Americans who need to communicate with the hearing aid user.

One other issue which relates to the impact of S. 604 is distance. Arizona is a state of wide open spaces, large communities separated by hundreds of miles. Our people must have telecommunications to continue a full-filling lifestyle. Isolation for our citizens need not be a self inflicted handicap because technology is not used at its best. By having a phone nearby one is confident that emergency services are

available. The tragedy is that to those hearing aid users that is not the case but S. 604 would solve that problem.

Senator GOLDWATER. I think you have given remarkable testimony and I just want to make one short comment.

I have been very close to this problem all of my life, all of my married life, and I have become acquainted with Dr. Hause of Los Angeles, Howard's brother. In fact, I am on their board.

Are you aware of the device that Dr. William Hause has developed that can be put in the vibrating part of the bone on a child as soon as they learn that child is deaf? The child can hear and can go through life with all the advantage of hearing. Are you aware of that development?

Mr. BRACKNEY. Mr. Chairman, yes, I am. Dr. Hause now has a physician located in Phoenix, a Dr. Daspit who has performed two of those surgeries. The surgery is identified as a cochlear implant. However, I would caution you, Senator, in identifying that as a restoration of hearing for hearing-impaired individuals.

Of the 200 people in the research I have read and the followup testimony—or rather research, not testimony, that Dr. Hause and staff have conducted, what they basically are finding is a rather substantial sound and noise awareness as opposed to a complete restoration of hearing. His research on cochlear implants and the continuation of such is being conducted now instead of just in California, but in outlying sites such as have been set up in Phoenix.

Senator GOLDWATER. This would apply to just a baby who is born deaf, and sometimes it takes a long time to discover that, and in that time the child has not had the benefit of hearing. When this operation you talk about is done, as I have seen the evidence on 20- to 40-year-old people, they probably will never learn to speak but they can tell sound; but if this is put in a newborn baby, it will theoretically prevent that child from ever growing up without the benefit of speech.

Of course, the big thing holding it back is the money, and we are working like the devil to get enough money to get it started. I am glad to hear he is in Phoenix. I didn't know that.

Mr. BRACKNEY. Yes, sir.

Senator GOLDWATER. He is going to be on some television show next Sunday. I will have to watch it.

Dr. Jackson, you are next.

Dr. JACKSON. Mr. Chairman, I will try to be quick.

Thank you very much for the opportunity to testify on these two bills. Just a word of background. I am a communications and computer engineer. I am personally interested in the problems of telecommunications for the deaf and hearing impaired. I have written and spoken on this topic several times before.

The views I express today are entirely my own.

I have five points to make on these two bills. First, while other witnesses will be far more convincing on this point than I can be, let me say that these bills address a real human need.

The second point. I think that we have in this case a true example of what economists call a market failure. If hearing aid users could vote in the marketplace with their dollars, they would buy the necessary modifications to the telephone instruments. Because there is a market failure, I think regulation is justified.

I am concerned that requiring hearing aid compatibility, particularly through inductive coupling, will impose significant costs. It will discourage innovation, and we have to balance the benefits to the hearing impaired with the impact on innovation.

On balance, I think that the benefits of reasonable regulation substantially outweigh any such costs, and going beyond such simple microeconomics, simple fairness supports the goals of this legislation.

As to the two bills before the committee, I think, Mr. Chairman, that your bill, S. 2355, is better crafted, substantially superior to S. 604 and should definitely be the starting point for any further steps in the legislative process. I recommend that you use it as the markup vehicle. I do have some quick suggestions I will get to in a minute on how to improve S. 2355.

I will expand a tiny bit on the point I made about market failure. I believe that the total cost to society of the modifications required to the telephone instruments to make them hearing aid compatible is relatively small compared to how much the hearing aid users value those benefits. If we had a mechanism for reimbursement, a kitty of some sort that they could all kick in $5 a year, they could probably put together enough money to pay for the cost of all these modifications.

The problem is that the hearing-impaired user doesn't know what company he is going to be working for 5 years from now, yet that company may be buying its phones today. There is no way the user can go to the person who is making the decision to buy the phones and say, "Look, it will cost $10 extra if the telephones are to be hearing aid compatible, here is my share of the $10."

Lacking that reimbursement mechanism, the market cannot work, and so perhaps regulation is required. Generally I am quite opposed to regulation, but in this case one can make a very, very strong and compelling argument that regulation makes sense.

I am concerned about regulation damaging innovation, damaging the ability of inventors, innovators, to bring new products to the marketplace. I think that in this area S. 2355 is substantially superior to S. 604. I read S. 604 as outlawing speaker phones while S. 2355 does not. I can give a long list of products—I mention others in my prepared testimony—that S. 604 would prohibit.

Let me just suggest some improvements to S. 2355. I think that perhaps it should have a somewhat clearer definition of the authority of the FCC. Is the FCC intended to regulate hearing aid manufacturers or telephone companies or just telephone equipment manufacturers?

Second, I think it should make clear the range of telephones Congress intends to be hearing aid compatible. I read S. 2355 to require the vast majority of telephones, whether in businesses or in homes, to be hearing aid compatible. S. 2355 allows exceptions in those situations here the provision of the inductive coupling capability would impose substantial cost.

Third, there should be a sunset provision. I think that after 10 or 15 years the bill should self-repeal itself, and if it is to be continued, Congress should reenact it. Thank you for this opportunity.

[The statement follows:]

STATEMENT OF DR. CHARLES L. JACKSON, PRESIDENT, SHOOSHAN AND JACKSON, INC.

Mr. Chairman, let me thank you for the opportunity to testify on S. 604 and S. 2355, two bills which address the problem of providing reasonable access to telecommunications by people who must use hearing aids.

First, a word of introduction. I am a communications and computer engineer. I am currently a consultant on communications matters and am an adjunct professor at Duke University's Institute of Policy Sciences. I was formerly on the staff of the House Communications Subcommittee, and before that worked at the FCC. I am quite interested in the problems of telecommunications and the deaf and have written and spoken on this topic previously. The views I express today are entirely my own.

I have five points to make today on the bills before you.

(1) Hearing aid users do have a problem gaining access to telephones. These bills address a real need.

(2) The hearing aid/telephone compatibility problem is probably an example of true market failure caused by excessive transaction costs.

(3) Any regulation or legislation to require compatibility will impose significant costs. Potentially, the most serious of these will be to discourage innovation in the telephone equipment field.

(4) On balance, I believe that the benefits of reasonable regulation would substantially outweigh the costs. And, going beyond economics, simple fairness supports the goals of this legislation. The public would be well served if Congress were to pass legislation requiring hearing aid/telephone compatibility.

(5) Your bill, Mr. Chairman, S. 2355, is better crafted and substantially superior to S. 604. It should be the starting point for any further steps in the legislative process.

I believe that S. 2355 would be improved by three modifications. The language of the bill should clearly define both the intended scope and the range of FCC regulation. In particular, it should state whether or not Congress intends that all telephones be hearing aid compatible or only those telephones in public places. Additionally, the bill should contain a sunset provision.

Let me expand on some of these points. I don't think I need to convince you of the need for this legislation. Others are far more articulate on that point than I can be.

The hearing aid/telephone compatibility problem is probably an honest example of market failure. If the hearing impaired could pay the added cost of the technical changes they desire, I think they would pay them. Universal hearing aid/telephone compatibility should cost about $5 to $10 dollars per year for each hearing aid user, by my calculations. I think that hearing aid users probably would be willing to pay that much to assure access.

The problem is, however, that there is no mechanism for them to pay. Compatibility adds to the cost of telephones. But, most consumers don't know about the hearing aid compatibility problem. Therefore, they don't take hearing aid compatibility into account when buying telephone equipment. And, the hearing impaired have no way to pay the few cents of extra cost added onto other peoples' telephones. The market can't work because the hearing impaired aren't the direct purchasers of all telephones.

Regulation of telephone/hearing aid compatibility poses a significant threat to innovation. If Congress declares that all telephones must do "X", then any designer of a new product will find that he must fight not only the laws of nature, but also the laws of man.

I could list several examples of telephone products which could not be brought to the market if all telephones had to be compatible with hearing aids. I'll save your time and mention just one. Technology will soon make it possible to build effective speech-to-text translation units. Such a device would be a boon to the totally deaf since it could be used to build a "telephone" with printed output. Why should the designer of such a unit be forced to add an induction coil? Indeed, could the designer always do so? Do we want that designer to be concerned about such issues at all? Would not such regulatory concerns only serve to distract and confuse inventors?

Allow me to address briefly the merits of the two bills now before you. S. 604 lacks flexibility. Under S. 604, all telephone receivers must be hearing aid compatible even if this requirement imposes enormous costs in special occasions. In contrast, your bill, S. 2355, balances costs and benefits and gives the FCC the authority to make reasonable regulations governing such compatibility. Thus, in my opinion, S. 2355 is far superior and would provide a workable scheme of regulation.

I would suggest three improvements to S. 2355. First, it should define the authority of the FCC For example, can the FCC regulate hearing aid manufacturers or

telephone companies? Or, would it be restricted to regulating telephone equipment manufacturers?

Second, the scope of desired regulation should be spelled out. Clearly, S. 2355 requires that public coin telephones be hearing aid compatible. It seems reasonable to infer that S. 2355 also intends that the vast majority of telephones in the United States, whether in offices or homes, be hearing aid compatible. But the exact goal is not clearly stated.

Third, I think that S. 2355 should contain a sunset provision which would remove the FCC's authority in this area after ten or 15 years. We are all too familiar with regulatory statutes that live on long after the need for them is gone.

One closing note: telephones have become an essential part of modern life. In my judgement, S. 2355 would serve both the goal of economic efficiency and the goal of fairness. I urge the Committee to adopt it.

Senator GOLDWATER. Thank you very much, Doctor.

The next one will be Dr. Steven White.

Dr. WHITE. Thank you, Mr. Chairman.

The American Speech-Language-Hearing Association appreciates being granted the opportunity to present our views regarding telephone compatibility with hearing aids. Our association represents over 36,000 speech-language pathologists and audiologists who provide evaluative and treatment services to the hearing impaired, scientifically investigate human communication and its disorders and teach in colleges and universities.

ASHA is supportive of legislation which will improve the lives of the approximately 2.5 million Americans who suffer from communication problems.

Both S. 604 and S. 2355 would insure a degree of compatibility of telephones with hearing aids which have induction coils. S. 604 would insure compatibility with all telephones, and S. 2355 would insure compatibility with coin-operated telephones.

I would like to talk about the number of Americans with hearing impairment, coin operated telephones, current telephone modifications which convert noninduction receivers to induction coil receivers, and then I would like to present our recommendations.

A report of the panel on communicative disorders to the National Advisory Neurological and Communicative Disorder and Stroke Council of 1979 reported that some degree of hearing impairment affects approximately 10 percent of the total population of the United States. In a document released in 1981, the National Center for Health Statistics reported that in 1971 nearly 14.5 million Americans were hearing impaired, and that in 1977 that figure had escalated to well over 16 million. This is a change of nearly 12 percent.

The rise in incidence of hearing loss may be due to a number of factors, including noise in our society and that we are living longer. Regardless, many of us are affected by hearing loss.

I also wanted to talk about coin-operated telephones. As you mentioned earlier, Mr. Chairman, coin-operated telephones are already becoming compatible with hearing aids, and we are pleased to learn of this. Regarding current telephone modifications, portable hearing aid couplers are made available by the telephone companies; however, a recent study conducted by Dr. Vic Gladstone of Towson State University here in Maryland discovered that the hearing aid amplified signal via converter was inferior to that via standard induction receiver in terms of background noise, frequency response and harmonic distortion.

Everyone deserves the right to effectively use today's communication tools to their fullest advantage. Telephone communication should not be a frustrating experience for individuals simply because a particular telephone is not usable with his or her hearing aid.

We believe that both S. 604 and S. 2355 have an appropriate goal but are either too inflexible or too flexible. The feature of S. 604 is that it insures hearing aid compatibility with telephones for all public and private settings.

On the other hand, S. 2355 insures the development of new telephone technology by directing the FCC to refrain from issuing any regulations which discourage or impair the development of new technology.

We would like to see telephone companies required to insure availability of telephones in all settings, public or private. Telephone companies should have to make certain that induction coil receivers are in place where a hearing-impaired person uses the telephone, especially in homes, the workplace and in public places.

Please understand, we are aware that these telephones are presently available in locales where noninduction telephones are standard; however, the public and the many professionals who serve the hearing impaired have little or no knowledge of the availability of hearing aid compatible telephones.

If the appropriate telephones could be put in place at no extra charge and the hearing-impaired person had no obstacles facing him or her in obtaining the appropriate telephone, S. 604 would be more reasonable. We would like to see S. 604 contain the language found in S. 2355 which would encourage the development of new technology while not sacrificing the needs of the hearing impaired.

In conclusion, both bills have significant merit. We support their intent and believe that S. 604 with suggested modifications would be the best for the hearing impaired and the telephone companies.

Thank you.

[The statement follows:]

STATEMENT OF STEVEN C. WHITE, PH. D., GOVERNMENT AFFAIRS DEPARTMENT, AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION

The American Speech-Language-Hearing Association (ASHA) appreciates being granted the opportunity to present our views regarding telephone compatibility with hearing aids. Our Association represents over 36,000 speech-language pathologists and audiologists who provide evaluative and treatment services to the hearing impaired, scientifically investigate human communication and its disorders, and teach in colleges and universities. ASHA is supportive of leghislation which will improve the lives of the approximately 22.6 million Americans who suffer from communication problems!

Both S. 604 and S. 2355 would ensure a degree of compatibility of telephones with hearing aids which have induction coils; S. 604 would ensure compatibility with all telephones and S. 2355 would ensure compatibility with coin-operated public telephones. This testimony addresses three issues regarding telephone service for the hearing impaired:

1. The number of Americans with hearing impairment;
2. Coin operated public telephones;
3. Current telephone modifications which convert non-induction receivers to induction coil receivers; and lastly, ASHA's recommendation will be presented.

THE NUMBER OF AMERICANS WITH HEARING IMPAIRMENT

A Report of the Panel on Communicative Disorders to the National Advisory Neurological and Communicative Disorders and Stroke Council of 1979[1] reported that some degree of hearing impairment affects approximately 10 percent of the total population of the United States. In a document released in 1981, the National Center for Health Statistics[2] reported that, in 1971, nearly fourteen and a half million Americans were hearing impaired and that, in 1977, the figure had escalated to well over 16 million. This is a change of nearly 12 percent. The rise in incidence of hearing loss may be due to a number of factors including noise in our society and that we are living longer. Regardless, many of us are affected by hearing loss.

Although the National Center for Helath Statistics data include tinnitus (ringing in the ears) and unilateral hearing loss (hearing loss in only one ear), the Center found that one-half of those reported had hearing loss involving both ears. The incidence figures are probably overly conservative because of the survey format of gathering the information. The numbers may have been higher had actual hearing testing been conducted.

COIN-OPERATED PUBLIC TELEPHONES

Coin-operated public telephones are already compatible with hearing aids. Mandating such compatibility will not influence the status quo.

CURRENT TELEPHONE MODIFICATIONS

Portable hearing aid couplers are made available by the telephone companies. However, a recent study conducted by Dr. Vic Gladstone of Towson State University discovered the hearing aid amplified signal via a converter was inferior to that via a standard induction receiver in terms of background noise (signal-to-noise level), frequency response, and harmonic distortion.

SUMMARY AND RECOMMENDATIONS

Everyone deserves the right to effectively use today's communication tools to their fullest advantage. Telephone communication should not be a frustrating experience for individuals simply because a particular telephone is not usable with his or her hearing aid.

We believe that both S. 604 and S. 2355 have an appropriate goal but are either too inflexible or too flexible. The feature of S. 604 is that it ensures hearing aid compatibility with telephones for all public and private settings. Unfortunately, in doing so it requires a type of induction receiver for those who do not need it. On the other hand, S. 2355 ensures the development of new telephone technology by directing the Federal Communications Commission to refrain from issuing any regulations which discourage or impair the development of new technology.

We recommend that the best provisions of each bill be united. We suggest modifying S. 604 so that the telephones which are not used by the hearing impaired, that is, the majority of the telephones, are not mandated to use induction coils. Rather, telephone companies should be required to ensure the availability of telephones in all settings: public or private. Telephone companies should have to make certain that induction coil receivers are in place where a hearing impaired person uses the telephone, especially in homes, the workplace, and in public places. Please understand, we are aware that these telephones are presently available in locales where non-induction telephones are standard. However, the public and the many professionals who serve the hearing impaired have little or no knowledge of the availability of hearing aid compatible telephones. If the appropriate telephones could be put in place at no extra charge and the hearing impaired person had no obstacles facing him or her in obtaining the appropriate telephone, S. 604 would be more reasonable.

Additionally, S. 604 should contain the language found in S. 2355 proposed Sec. 225.(e). This language would encourage the development of new technology while not sacrificing the needs of the hearing impaired.

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[1] National Institute of Neurological and Communicative Disorders and Stroke, Report of the Panel on Communicative Disorders to the National Advisory Neurological and Communicative Disorders and Stroke Council. U.S. Department of Health and Human Services, NIH Publication No. 81-1914, June 1, 1979.

[2] National Center for Health Statistics, *Prevalence of Selected Impairments,* U.S.-1977. Health Resources Administration, DHEW Publication No. (HRA) 81-1562, 1981.

In conclusion, both Senate bills have significant merit. We support their intent and believe that S. 604 with suggested modifications would be the best for the hearing impaired and the telephone companies.

Senator GOLDWATER. Thank you very much, Doctor.

Now we have Mr. David Saks, who is accompanied by Edana Lee Schmidt.

Mr. Saks.

Mr. SAKS. Mr. Chairman, Mrs. Schmidt and I are sharing time as representatives of the Organization for Use of the Telephone, which is a nationwide all volunteer, nonprofit organization devoted to the interests of hearing-impaired people.

We appreciate the opportunity to set forth our views on the legislation under consideration, and we are especially grateful to you, Mr. Chairman, for the sensitivity and concern you are showing by personally conducting this hearing.

Our written testimony details our reasons for vigorously supporting S. 604 and opposing S. 2355. It responds to the EIA overview statement in an appendix, and in a second appendix it offers proof that hearing aid compatibility is consistent with superior telephone service.[1]

We feel that this issue should be kept clear of the FCC, whose proposed 1983 budget is $6 million less than its 1981 expenditure. Its staff is 402 persons fewer. New responsibilities constantly are being added.

Mr. Chairman, S. 604 is designed for simple implementation flowing from direct congressional mandate, much in the manner of Public Law 94-553, in which Congress set up a licensing system for cable TV without FCC intervention.

We have found an apprehension among some, among many, that a mandated technology might in some way impede technological progress.

In recognition of the sincerity of these concerns, we propose that the following words be added to S. 604 at the end of line 22 on page 2: "or unless such telephone receiver utilizes other built-in technology of equivalent benefit." This change should allay final reservations as to the feasibility and constructive character of S. 604.

S. 604, in conjunction with industry field strength standards, will comprise a telephone hearing aid compatibility system that will eradicate "phone deafness" from our country forever.

Thank you, sir.

[The statement follows:]

STATEMENT OF DAVID SAKS, DIRECTOR, ORGANIZATION FOR USE OF THE TELEPHONE

Mr. Chairman, members of the Subcommittee, my name is David Saks. I represent the Organization for Use of the Telephone, better known by our initials, O-U-T. OUT is an all-volunteer non-profit advocacy organization established in 1973. Our membership extends nationwide. Most of our members use hearing aids. Our primary concern is the effective use of telephones with hearing aids. Our primary goal is full unencumbered access to all telephones for people who must use hearing aid telephone pickups (induction coils) in order to communicate by phone.

In furtherance of this primary goal, we enthusiastically support S 604 and are grateful for this opportunity to be here today to appeal to you for favorable consideration of the legislation.

[1] The appendixes referred to have been retained in the committee files.

The incompatibility between telephones and hearing aids is a serious problem today and we seek a solution within the limits of today's technology for the hearing-impaired people of today. The problem arises from several obvious, undisputed facts that exist side-by-side in our increasingly complex society:

1. Technology today can compensate for many human disabilities. Among them, it can bring the miracle of voice telephone communication to "phone deaf" people who cannot hear telephone conversation otherwise. More than 2,000,000 people use hearing aids with built-in inductive telephone pickups. These people have suffered severe and profound hearing losses, but have retained sufficient residual hearing to be within reach of compensating hearing aid technology. Their numbers are increasing daily, as the nation's average age increases and as hearing aid technology reaches new horizons. To enable such people to hear over telephones, hearing aid manufacturers provide an induction coil within hearing aids, which is sensitive to the magnetic energy created by telepone receivers such as those used by AT&T in their basic telephones.

2. This magnetic receiver is in widespread use throughout the country. Bell System basic phones have been using it since 1951, to the great benefit of people who use hearing aids. We estimate that 75 percent of the telephones (about 135,000,000) in the national network employ this beneficial technology.

3. About 25 percent of U.S. telephones (some 45,000,000 instruments) fail to utilize this widely-known, readily available, inexpensive, effective technology, thereby foreclosing access to the national network for many people.

S. 604 provides a simple solution to the complexities resulting from this intolerable under-utilization of available technology. Its single provision goes directly to the heart of the problem: manufacturers and importers of telephones.

S. 604 imposes no regulatory burden on any executive agency of our government.

S. 604 imposes no cost on government, no cost on industry, an insignificant penny-a-year cost per existing phone on consumers.

S. 604 is simple to monitor and enforce. We understand that there are only 42 manufacturers and importers of telephones.

S. 604 relies on gradualism to bring about full access to the entire telephone network for users of hearng aid telepone pickups, a significant compromise of OUT's position that all telephones must work with all hearing aids—everywhere. It requires that new production be hearing aid-compatible while voluntary industry measures, attrition and obsolescence gradually bring into being universal accessibility. During the nine years that our organization has struggled to solve the problem of telephone/hearing aid incompatibility, we have proceeded along three parallel paths: direct negotiation, regulatory relief and legislative remedy.

Direct negotiations have resulted in the retrofitting of many coin-operated public phones and virtually all installations of new coin phones are hearing aid-compatible.

State regulatory agencies have been helpful. For example, the Maryland Public Service Commission authorized the expenditure by Chesapeake and Potomac Telephone Company of $56,000 for the exchange of nearly 6,000 incompatible telephones in Maryland hospitals.

Legislative efforts have had some limited success at the State level. Another example from Maryland: State departments and agencies have been directed to refrain from installing hearing aid-incompatible telephones since 1978. Now S. 604 provides a means by which we can appeal to you for relief.

Telephone/hearing aid compatibility is a national problem. Our telephone network is national in scope. the interconnect industry is installing incompatible phones everywhere, even in former Bell System "safe havens." We turn to you for a natonal solution to a national problem. S. 604 places a workable, simple, low-cost solution before you.

During those nine long years of struggle, the telephone industry has proposed successive non-solutions to the problem, apparently with the aim of thwarting the demand for universal accessibility. There has developed a "solution of the year" pattern. The non-solutions have served their real purpose well—they have sewn confusion and introduced complexities into a simple problem with a simple real solution.

First, AT&T introduced and adapter/coupler as the "solution of the year." This cumbersome, unwieldy devise, unnecessarily embarrassing and demeaning to use, difficult or impossible to attach, never has worked to provide a magnetic field comparable in quality to that delivered by the U-type or blue grommet type receiver untis. Despite this acknowledged fact, it has continued to be advertised and offered for sale. When low, almost imperceptible, sales suggested that the adapter "solution" had run its course, an improved version was put in work. To our best knowledge, no such improved version has been marketed.

Second "solution of the year" was the telephone companies' policy of providing compatible phones "on request" of a subscriber, again introducing complexity where simplicity will do. To implement the "on request" policy, AT&T and GTE both have undertaken extensive and expensive personnel training programs that have largely failed. A usable telephone only at home or only at a specific worksite, restricts the mobility of the requesting person to those two sites. He or she cannot use a phone when visiting, when shopping, when anywhere outside his or her own little nest. At work, or seeking work, the hearing-impaired person is at a decided and obvious disadvantage. He or she lacks the flexibility to move about and use any telephone on the premises. Imagine a department store employee who cannot circulate around the store and reach out and touch someone back at home base. Consider the case of David Smith, New York accountant, who must spend much time in the offices of his clients. He is able to telephone clients from his office, but cannot phone his office from the premises of his clients. "On request" cannot seriously be considered as a solution.

Adapters and "on request" service might be useful alternatives if technology did not offer a simpler, more reliable, more effective means of coupling hearing aids directly to telephones—the inductive reception that results when a hearing aid induction coil is placed in proximity to the magnetic field surrounding a telephone receiver with inductive capability. "Solution of the year" has a fellow traveler in the "excuse of the year." First came cost. All sorts of figures have been put forth, AT&T saying at the outset that costs could increase by $50,000,000 a year. No such claims have been heard in recent years. Then came the difference in cost between compatible and incompatible receivers, always quoted in general terms, never in exact dollars and cents. Questioning by members of a House Subcommittee in 1980 developed a consensus of about 50¢ as the additional cost to produce a hearing aid-compatible receiver. When passed on to subscribers, this extra cost melts down to one penny per year per existing home and business phone!

After cost, responsibility of the hearing aid industry became the "excuse of the year." When it became clear that the hearing aid industry provides its share of the compatibility equation by inserting the induction coil, and that hearing aid industry as well as telephone industry researchers had failed in extensive efforts to develop effective alternative means of coupling, it was time for a new "excuse of the year." Then came "inhibiting future technology." The electronic telephone is heralded as the "telephone of the future" and it is capable of utilizing a receiver with inductive capability. Members of OUT recently participated in a field trial of new AT&T telephones. Among them was one electronic phone. It was unanimously deemed the best of the lot when used with a hearing aid telephone pickup, that is, when used inductively. Northern Telecom, developer of the electronic telephone, has assured us that this new technology may be used with either type of receiver. Further developments in technology beyond the electronic telephone are said to be twenty or thirty years in the future. S. 604 will have served its purpose well by then, and may be ready for amendment or outright repeal. We are confident that Congressmen, telephone industry officials and consumers of that generation will be capable of solving the problems of that generation, just as we are attempting to solve our problems today. Hearing-impaired people have been great beneficiaries of technological advancement. Some of us still remember the large, weighty battery packs worn with hearing aids, as we marvel at today's tiny efficient devices that not only amplify but also perform new compensating functions.

We also look forward to advancements in telephone technology to enhance communication opportunities for hearing-impaired people. We look forward to close cooperation with all segments of the telephone industry, through consultation (such as our semi-annual meetings), through field trials of equipment under development (such as our recent test of AT&T handsets), and in the evolution of legislative and regulatory measures appropriate to the changing times (such as the mutual good to be derived today from the enactment of S. 604).

Hearing aid users will gain access to the entire national telephone network in time, if S. 604 is enacted. The telephone industry will gain millions of new customers as a result of the enactment of S. 604, and more millions in the years ahead, which will be reflected in significant additional revenues.

It is generally agreed that free and unencumbered access to all telephones is a desirable goal and that non-impaired people will benefit along with those who are hearing-impaired. Communication among all people will be enhanced, to the good of our entire society. Thus it is eminently appropriate for the tiny cost involved to be shared by all.

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The Electronic Industries Association (EIA) in its RS–470 telephone standards states, "It is desirable that the telephone set provide . . . a magnetic field for use with hearing aid telephone coils."

AT&T declared in its August 31, 1979, Management Report, "The Bell System reaffirms its commitment to the continuing development and availability of telecommunications services for disabled persons that are equivalent to basic telephone service. . . . The Bell System will continue to make available residence and coin telephones that are compatible with hearing aids. . . ."

GTE Comments to the FCC in Common Carrier Docket 78–50 understandingly said, "The hearing-impaired are asking for the ability to make full use of the NPSTN, on a basis comparable to any other user, without unreasonable costs or unfair inconvenience. These are important needs from the perspective of the individuals involved and of society in general, which has a direct interest in seeing that hearing-impaired citizens are able to play a fully productive role in society."

Not only statement such as these, but also hundreds of thousands of coin phones, retrofitted by AT&T, GTE and many others at great expense, are living evidence of the universal agreement on the need for telephone/hearing aid compatibility. The process by which this coin phone program was accomplished is precisely the process provided for by S. 604: coin telephone manufacturers were directed, by their operating company customers, to use receivers with inductive capability in all coin phone production. S. 604 simply provides that all new telephone receivers are to be upgraded to the requisite performance level.

The telephone, the technological miracle that makes it possible for individuals to communicate at distances, seems rather commonplace today. Future advances in telephone technology must preserve or improve the communication capabilities of hearing aid users.

Our business and social lives are built around telephones. Most people take them for granted—not including the "phone deaf" people who are served by companies which fail to utilize the only known technology that makes telephones usable for them.

In other respects hearing aid users are mainstreamed into general society, they hold jobs, practice professions, operate businesses, enjoy family lives, engage in sports and social activities, travel, pursue education, lead a relatively normal life—except that "phone deaf" people cannot place a phone call or receive a phone call—if the phone is in the service area of an independent telephone company or is a Bell System incompatible Trimline or business system, or a telephone supplied by an interconnect company. Modern technology says hearing aid users can hear telephone conversation—the telephone industry says they may not.

The right to hear is implicit in our Constitutional guarantee of free speech. The right to speak freely is a hollow right indeed if your audience has no corresponding right to hear your voice.

We have been asked to comment on S. 2355. We feel that S. 2355, regardless of its intent, introduces unnecessary complexities as it seeks a solution. S. 604, on the other hand, is direct and simple to implement and to enforce.

S. 2355 imposes new responsibilities on the Federal Communications Commission at a time when there is great emphasis on relieving regulatory agencies of responsibilities and paper work. S. 604 merely requires that all new telephone receivers meet the performance level of the AT&T U-type receiver.

S. 2355 does not provide for compatibility of home and workplace phones. S. 604 applies to all new phones. Home and workplace phones are important for non-impaired people. They are equally important for hearing-impaired people. It can be argued that home and workplace phones are the most important and most frequently used of all telephones.

It is not clear to us whether S. 2355 applies to retrofitting in Section 225 (a) and (d) or to new production only. S. 604 specifies that its provision applies only to newly manufactured, refurbished and imported telephones.

The strongest provision in S. 2355 mandates compatibility of coin-operated phones. There is no need for Federal legislation to accomplish this since coin phones in the United States are virtually all hearing aid-compatible through voluntary action on the part of the telephone industry.

We strongly support S. 604 and we appeal to you for a favorable vote. We strongly object to the provisions of S. 2355 and we oppose its enactment.

Thank you very much.

Senator GOLDWATER. Thank you very much, Mr. Saks, and you have quite a bit of material here. We will make that all part of the committee files.

Mr. SAKS. Thank you.

Senator GOLDWATER. I wonder if Ms. Schmidt would like to add something.

Ms. SCHMIDT. I would indeed, Senator.

Some folks who are hard of hearing are able to use a telephone in a rather normal fashion. I am severely hearing impaired. I wear two very powerful hearing aids. I cannot use a telephone in a normal fashion. If I put the phone up to my ear, you are going to hear a tremendously loud feedback, I believe. I cannot hear it myself.

That is caused by two things: The positioning of the phone by the microphone and my increasing the volume of my hearing aid to help myself hear. It makes a horrible racket. Now, this means that I cannot talk to you. It also means that you cannot talk to me because you cannot stand that noise. So I have never in 20 years been able to successfully use this telephone.

If I turn on the T coil, which is on right now because of our loop, and put the phone up here, we get no feedback. I can turn it up as loud as I want, I can pick up anything and I can hear just like you can on a telephone. We were going to show you a couple of those types of hearing aids.

We have been very successful using them. Once that switch is in the T position, sir, you will find that the environmental noise is cut out and you are using the inductive pickup that is available to us. It gives me access, then, to society's most valuable tool for business, for pleasure and, as the phone company frequency tells us, for reaching out to touch someone.

Mr. Chairman, I have on numerous occasions traveled in parts of our country where the telephones were not compatible with my hearing aids. The T switch would not work, and it is very frustrating. It is an infuriating experience. I can remember being alone, having literally driven through a hurricane, and I could not communicate with my family to let them know that I was all right. I was surrounded by telephones and I could not use them.

I have a 23-year-old hearing-impaired daughter who wears two hearing aids also. She has never considered herself handicapped until she took her first job in an area of the country where the phones were not compatible. For the first time in her life, she had to have an interpreter between her and the telephone to receive and to send messages. It was a total stranger who had to tell her that her grandmother died because she could not hear her sister on the telephone.

Now, that daughter grew up being able to talk on a telephone just like that. She was phone deaf. I am here for that reason. I am here for my daughter, I am here for myself. We operate as normal hearing people in society. We are integrated into the contributing members of society. But when you take away our ability to communicate by phone, you put us in a handicapping situation.

We don't think of ourselves as handicapped, but you can create for us a situation where we become handicapped. I don't want to be, and that is why I am here. Don't make me that way, please.

Senator GOLDWATER. Well, I think I can sympathize with you more than you know because I have been living with my wife of 48 years and it has gotten down to times where we write each other

notes, but now I am convinced I have to have a hearing aid. After 54 years of flying airplanes, I am getting a little hard of hearing, and my wife is tickled to death.

But this telephone problem you talk about is a very natural phenomenon in electronics. Sometimes you have been out and listened to a speech, or tried to listen, and you get the feedback when two loudspeakers feed into each other, and this is precisely what happens when your little ear gadget talks to the microphone at the same time you are trying to listen.

Ms. SCHMIDT. That is what happens.

Senator GOLDWATER. Well, I won't get into that, but I am in complete sympathy with you.

Now I have some questions, and I will start with Mr. Brackney, and any of you, if you want to comment on the answers to these questions, feel free to do it.

Mr. Brackney, do you feel that any Federal legislation that addresses this problem should preempt State regulation?

Mr. BRACKNEY. Mr. Chairman, I would answer "Yes" to that, and the reason for that is that we have seen for a long time historically in this country that States have found it very difficult to get together in reference to laws dealing with one particular subject.

We have a very mobile community, and as was indicated in prior testimony, I cannot see how you can expect, by asking individual States to pass their legislation—we would ask for an osmotic process if you didn't go for Federal legislation that superseded the States, and therefore you would end up with hearing-impaired individuals taking a U.S. map and coloring red those States that they could use the telephone and hearing aids together.

I don't see that that would be feasible for either the phone companies or the manufacturers or the hearing-impaired people.

Senator GOLDWATER. Of course, this is a growing problem. I was a little shocked to see that it has gone from 11.3 percent up to about 14 percent, and I think with all the awful noise that we have to put up with, it is going to get worse. I built my home way out in the desert so I wouldn't have to listen to anything but the birds, and now I have trucks going by all night. So I think it is going to get a lot worse.

You stated, Mr. Brackney, that Arizona is served by 11 telephone companies, and I can verify that. How are these companies informing consumers about the compatibility problems?

Mr. BRACKNEY. Mr. Chairman, my experience has been with some of the most outspoken hearing aid users, and I have contacted some phone companies. I don't believe that they are doing this in an aggressive manner.

In reference to A.T. & T., or now Mountain Bell in Arizona, as you know, they have a special needs office. No one can discount that, and the special needs office is designed to serve the hearing impaired. However, it is manned by one person. And when one looks at the amount of information that you can obtain from the telephone company, if you are looking for one office amongst all the offices that telephone companies have, one finds that it becomes very difficult to be informed, No. 1, that there is amplification equipment.

Maybe the best example to that, Senator, would be in reference to the telephone company who reduced their long distance telephone rates for telecommunication devices for the deaf, that teletype machine. We still have hearing-impaired or deaf people who don't know about that rate reduction, and when one looks at the reason why, one sees that the phone company is very busy in other activities. I am not sure that they are as aggressive to inform the community that such reduction is available, and I am not sure that it has been done before.

Senator GOLDWATER. Well, I think we both know Mr. Nick Volchoff, and he sent me this material that Bell puts out, but I have to tell you it is very, very recent. I remember calling him one day 7 years ago, and I said, "Don't you people make anything so that hard of hearing people can hear the phone?" "Oh, sure, we make it." I said, "Why the hell didn't you tell me about it?" Well, he had forgotten it.

I think the telephone companies have not been aggressive. I talked to the president of A.T. & T. about these bills. He said, oh, we want to do that, you don't have to worry about legislation, we are doing it. I said, well, you are not telling anybody about it. I know a lot of hard of hearing people who don't realize that they can get a little amplifier button on their receiver.

Mr. BRACKNEY. Mr. Chairman, when your wife was in the hospital in Phoenix, I was talking to the telecommunications director at that hospital and he was one of the few, which I checked on later, who knew of the amplified hand set that he could stock in his office for individuals with a profound hearing loss, and we are not even talking compatibility with a hearing aid, we are talking just an amplified receiver which he could plug into any phone in the rooms.

So that type of information is not known by large businesses such as the medical profession.

Senator GOLDWATER. Well, I will tell you: you and I as two Arizonans ought to take on the task of getting those 11 companies to serve as a model for the rest of the country. I will do my part.

Thank you.

Mr. BRACKNEY. Yes, sir.

Senator GOLDWATER. Dr. Jackson, in your testimony you gave one example of a product that would not reach the market if it had to be compatible. What are some other examples of telephone products that would not be marketed if universal compatibility is required?

Dr. JACKSON. In my printed testimony, I gave a different example than a speaker phone, which I mentioned. Let me just mention two others. It may be possible soon, although I do not think it is technologically possible today, to build a device that converts effectively from spoken speech to text. It would be possible to hook such a computer system into a telephone line, allowing a person who is totally deaf but has speaking or typing skills to talk to the person on the other side by reading what the person says and responding. Maybe there would be some phonetic errors for the first few years, but we could build something like that maybe 5 or 8 years from now.

But, when a guy sits down to design such a unit, if he is told that there is a Federal law that says when he builds it he must also make sure that there is an inductive loop—so designed, that a person standing where the reader would be standing gets an adequate signal for a T-coupler in a hearing aid, he receives an extra burden.

I can give you another example which is somewhat different. In airplanes today there are stereo sets with plastic, disposable earpieces that are very, very cheap. The speakers for those earpieces are actually contained in the seat. An acoustic wave guide takes the signal up to the ear. There would be no possibility of low-cost inductive coupling.

If someone wanted to use those speakers for some sort of in-plane telephone system, then S. 604 would prohibit that use; yet, S. 2355 would allow it. And that flexibility is one of the reasons I favor S. 2355. In situations where the cost of inductive coupling would be prohibitive, it allows people to bring products to the market without the inductive coupling capability.

Senator GOLDWATER. Senator Cannon, the author of one of these bills, with whom I serve as a cosponsor, has just come in and I am going to turn it over to him. But I have seen the little speechwriter, as we call it. In fact, it is not far off. It is so close that I can make one. I would not want to sell it to anybody; I might get it back. But it would work.

Mr. SAKS. Senator, may I add just a sentence to Dr. Jackson's remarks? A hearing aidcompatible receiver on the telephone is not inconsistent with a speaker phone. I have one. I use a speaker phone because of my limited use of my hand, and I use a hearing aidcompatible telephone because it is a Bell System basic phone. And I have done considerable reading on speech recognition; the transmission of speech to be received as a visual display, and that would not be inconsistent with the hearing aidcompatible receiver, either.

Senator GOLDWATER. Senator Cannon, you have just come in.

Senator CANNON. Thank you, Mr. Chairman. It seems to me that this bill of Senator Mathias' goes quite far, if you are going to outlaw all telephones that do not produce an electromagnetic field which could be coupled with a hearing aid. Isn't that sort of an overkill type of a situation? Doctor, let me ask you.

Dr. JACKSON. I would argue that it is overkill. I would think that the public interest would be well served by having the vast majority of telephones contain such inductive fields. But it is easy to think of special situations where it would be difficult or impossible to add those inductive fields, and it would add a lot of expense and very little benefit.

Senator CANNON. So long as there were reasonable access for the types of systems that would be compatible with the hearing aids? Is that really what you are saying?

Dr. JACKSON. Yes.

Ms. SCHMIDT. Senator, as a hearing-impaired individual who needs a compatible phone to hear, I have to take exception with what the doctor says. I want to be able to compete in the marketplace; I want to be able to go from one friend's home to my daughter's home to my other daughter's home. I want to be able to talk

on the phone. I do not want to be handicapped by not being able to pick up a phone and talk on it. And it is such an insignificant little thing that we are asking for.

I have been in a situation where I needed to talk to my family. I was in an area where the regular phones were not compatible. The pay phones were. I had to get in my car and drive 2 miles down the road to find a pay phone at 10 o'clock at night to call Baltimore to find out if my daughter was well. I find this not right.

Senator CANNON. First, let me suggest for your convenience and the convenience of others who need that—and I do not hear too well either—that I would not want to require something on every phone in the country or make it so that you could not make a phone available without that kind of a system on it, as long as there were reasonable access to those phones.

It seems to me in the first place, that is getting the Government into more regulation, and I believe in less regulation. And second, that is putting an added expense onto some consumers that may not have that necessity at all.

Ms. SCHMIDT. I believe Senator Mathias earlier talked about the penny per year cost that it would be. And of course, we are not talking about a retroactive situation anyway. We are talking about the manufacture of new equipment as it is being made.

Western Electric telephones, which are 80 percent of the phones in this country, are compatible. It is all of the other little phones, all of the little phone stores, the phones that Senator Goldwater was referring to earlier that are manufactured outside of this country that are creating a problem that was not there before. They were all basically within the same area, electronically.

And the technology that we need is such a very, very little thing; it is not a costly thing. It is something that almost anyone can handle, any repairman that comes into your house can open the phone up. I have watched them convert a phone. We are not asking anyone to go back and convert phones. It has been done in the State of Maryland. It has been done in all the hospitals because we found that all the hospitals in the State of Maryland did not have compatible phones.

So they have been done and can be done, but we are not asking for that. We are just saying why do you have to manufacture a telephone that is going to prohibit a large portion of the population from not being able to use that phone when for a very insignificant cost, like a penny a year, you can make that phone work for anybody.

We do not know when we are going to be the one with the hearing aid on. We are going to give him one soon. You might have to have a compatible phone.

Senator CANNON. Well, I just happen to think that S. 2355 goes far enough, myself. I do not think it is in the best interest of the consumers for the Federal Government to jump in and regulate and require something, as a general requirement. And there are an awful lot of consumers in this country.

Ms. SCHMIDT. And I am one of them.

Senator CANNON. I know, I am, too. Consider what we have done in S. 2355. We have said that the FCC should insure reasonable access for the hearing impaired. And it mandates an electromag-

netic field on pay phones. It permits the FCC to require the field on other phones if they make a determination that that was necessary. It gives the regulatory agency that authority if they feel it should be required. And it directs them to set technical standards and permits them to require equipment and packages be labeled for consumer information. So that if a person is going out and buying a phone on the market, they immediately would know whether or not it is compatible. Now, don't you think that is a pretty broad coverage right there?

Ms. SCHMIDT. I do, sir. I have a problem with one thing. We are told regularly about this cost factor. Last month I was in South Carolina. I have spent time there on a number of occasions, and there are areas of South Carolina where the phones are not compatible, with the exception of pay phones.

Now, you can call up and request and they will put a phone in if you are in an area served by GTE. My hearing-impaired daughter was in Hilton Head, S.C. They do not know what a compatible phone is, period. But anyway, last month I was in a house in South Carolina, a new house. There was a Trimline phone on the wall. Now, even in A.T. & T. territory, Trimline phones are not compatible unless you request them.

I walked over to the phone just to demonstrate something, picked it up—it was a compatible phone. In other words, they randomly install these telephones, some of which are compatible and some of which are not. So obviously, the cost factor cannot be too great. And that was not a requested phone. The people who had the phone did not even know they had a compatible phone. If I had not picked it up just out of frustration to say look, I cannot hear on this phone, I would not have known it.

Senator CANNON. Do we have any estimates—Dr. Jackson, can you tell us if there are estimates as to what the cost factor would be?

Dr. JACKSON. I think the witnesses in the next panel would be better equipped to address that because they are from the manufacturing industry. When I looked into this in the past, the cost to the manufacturer, the estimates I saw, ranged from about 70 cents a phone to $1.50 or something like that. It is a little bit extra.

It also depends on the technology used in making the earpiece, the receiver mechanism. Some of the older technologies created this inductive field as an essentially free side effect, and that is how the whole hearing aid telecoil began—using this side effect.

Senator GOLDWATER. I was going to ask Dr. Jackson, if you do not mind, Howard, could you expand on your estimates that universal compatibility would cost $5 to $10 per year for each hearing aid user?

Dr. JACKSON. Sure, I would be glad to. My understanding is that sales, annual sales, of telephones in this country are about 20 million units a year—it is in that ballpark—at a $1 a unit, which again is in the ballpark.

That $20 million works out to $10 for every hearing aid user. Since there are about 2 million hearing aid users. Two million with telecoils. This $20 million extra expense a year requirement for compatibility, is an upper limit because many of the telephones that are manufactured today are actually remanufactured. The

Bell System takes old telephones out of service, puts a new plastic housing on them but uses the same old receiver mechanism housing a leakage field. So the number of totally new telephones manufactured is smaller than the 20 million figure I used. In fact, my estimate of annual costs of $10 per direct beneficiary is probably high.

But that is the basic calculation I was going through, comparing the number of telephones and the added cost of those telephones to the number of hearing aid users, and you get a relatively small number per user.

Senator GOLDWATER. Dr. White, you have indicated that S. 604 or S. 2355 could improve the lives of 22.6 million Americans who suffer from communication problems. Do you know how many of that figure own hearing aids equipped with these coils? And do all of these individuals use the coils for the telephone?

Dr. WHITE. I do not know how many of them have telephone coil hearing aids. I do know that it is very possible that more of them would have hearing aids that had telephone coils if they knew about the telephone compatibility.

Before coming to work for the American Speech, Language-Hearing Association, I was an audiologist in Michigan and practiced in East Lansing, where the telephones were compatible with hearing aids without any request. However, if we saw someone from a town like Owosso, Mich., who worked in Lansing, we would have to say to the patient that your telephone coil will work here in Lansing, but when you go home you are going to have difficulty. The telephone switch will not work unless you request a special receiver from the telephone company.

When requesting a compatible unit, in many instances the patient would have a great many problems, just like the gentleman from Arizona said. There are a great many problems getting the telephone compatible unit from the telephone company.

Senator GOLDWATER. Well, I have no other questions, do you, Howard?

Senator CANNON. No, thank you.

Senator GOLDWATER. I want to thank each one of you for coming. I have known Mr. Saks for a long, long time. We have talked over the years about it, and each of you has made a very good contribution. I really think that one of our basic problems is getting the word out.

I think the solution is there; I think the telephone companies have provided it. I think Americans—maybe I could throw in the Japanese and Taiwan—I think they have the solution but we have not been telling the people about it. And this is a field that I have been very deeply interested in most of my life, and there has not been too much done.

So thanks a lot for being here. Just keep up your good work.

Now, the next panel, Mr. Dennis Sullivan, Jr., assistant vice president, product management and development, American Telephone & Telegraph Co., Mr. Daniel L. Bart, senior attorney, General Telephone & Electronics Corp. And Mr. O. J. Gusella, chairman of the telephone equipment section, communications division, Electronic Industries Association.

I have a hunch these fellows can answer a lot of the questions about costs. Gentlemen, just be seated, and as I have said, if you want to put your entire statement in the record, it will be done, or you can read it. Just watch the lights. We are not too tough about them, but time is of the essence.

Mr. Sullivan, you are first on the list, so you may start.

STATEMENTS OF DENNIS J. SULLIVAN, JR., ASSISTANT VICE PRESIDENT, PRODUCTS MANAGEMENT AND DEVELOPMENT, AMERICAN TELEPHONE & TELEGRAPH CO., INC.; DANIEL L. BART, SENIOR ATTORNEY, GENERAL TELEPHONE & ELECTRONICS CORP.; AND O. J. GUSELLA, CHAIRMAN, TELEPHONE EQUIPMENT SECTION, COMMUNICATIONS DIVISION, ELECTRONIC INDUSTRIES ASSOCIATION

Mr. SULLIVAN. Thank you, Mr. Chairman. It is a privilege to be here to comment on these two bills. I submit my testimony for the record, and I am going to just go through a summary of it this morning.

Essentially, there is one major point that I would like to focus on, and that is that the Bell System has taken quite a bit of pride in meeting the needs of its disabled customers. We think this is very important, and we have been at it for quite some time.

I have brought with me some brochures which are appendix A of my testimony, and I might point out that these are available at contact points throughout the Bell System to help promulgate the things that we do with our product line to help the disabled.

I might also point out that in the front part of each telephone directory is a mechanism for the disabled, and the hearing impaired in particular, to know where to call in order to get some help on services available.

The context in which we provide aid to our disabled customers has to be mindful that we also have a broader responsibility of providing quality telephone service at affordable prices to all of our customers. And we have approached the problem in that context.

The issue of compatibility between inductive type hearing aids and telephone handsets involves a small subgroup of our hearing-impaired customers; a very important group but nevertheless, they number about 500,000. That is the number who actually use the T coil in a hearing aid.

We have, by contrast, 143 million telephones and I think the juxtaposition of those two numbers is important in the consideration of legislation. Nevertheless, the Bell System has voluntarily worked at efforts to produce a practical solution to the problem in the issue of hearing compatibility. We have done this in the following manner.

We have converted every one of our one and a half million public telephones. The blue grommet is now universal on Bell public telephones because we, too, recognize the importance of the random selection and need of a public telephone.

We have 108 million of our general purpose telephones, and the touchtone version of that is right here. This handset is a familiar one. We have been producing them for over 20 years. They are all compatible, and there are very few of our 60 million homes that do

not have at least one of these sets, either in the desk or wall version.

The Trimline, which I have here, is not compatible. It has an L-type receiver in it that is about $1.50 per unit cheaper to produce, and it holds up better. But you may get the Trimline compatible upon request. We also have the availability in our business locations for people who have a hearing impairment to either use the general purpose type set or this new handset that we have just developed and introduced in 1981. So that I can say that virtually all of our newly manufactured business telephones do have the inductive coupling capability.

And this unit here is a residence set, the new electronic set with an electret microphone that also is compatible, and having been made compatible, for hearing coupling.

One other device that we have just come out with or will come out with in July of this year, is an adapter. And I could not help but think in listening to the commentary and the perplexing difficulty of where one goes, that this may be an answer for a lot of the problems that we have been talking about.

The adapter fits over the telephone, over the receiver in this manner, and once there has a little switch that can operate it, and it converts any telephone into one that produces a magnetic field. I might add that this adapter has a greater coupling capability than the U-type receiver, which is a de facto standard in the industry.

Senator GOLDWATER. How much is that little device?

Mr. SULLIVAN. That will sell for $47, which is a non profit basis, and we will make that available on a design basis anywhere in the country.

There are three points, just in summary, in the legislation that we are deeply concerned about, and having made the point that voluntarily we are meeting these requirements, we think we will continue to do so without the needed stimulus of legislation. But if it is decided that legislation is in the public interest, we are concerned that we not freeze technology to the 1960 level.

We believe, for example, that signal processing technology which is used in our satellite circuitry might have the potential, by virtue of emphasis on low frequencies and canceling noise, to be a solution for acoustic coupling in the future. And we think it would be sad indeed if the incentive to do that were cut out through legislation.

The second point is the cost which has been commented upon. We believe that the U-type that is in this particular telephone should be the de facto standard, and anything comparable to it will be a solution. We spend, or would have to spend, to equip our entire line about $9 million a year, and we are very mindful of that as it impacts the consuming public.

And the final point is that regulatory authority required to monitor proposed legislation should be streamlined. We see no benefits in having elaborate standard conformance tests and other things that might stifle technological progress. I would be happy to respond to any questions.

[The statement follows:]

STATEMENT OF DENNIS J. SULLIVAN, JR., ASSISTANT VICE PRESIDENT, A.T. & T. CO., INC.

SUMMARY

Providing quality telephone service at affordable rates for all our customers and meeting the special needs of our disabled customers have been important Bell System concerns. The Bell System is proud of its track record on both of these matters.

Compatibility between inductive-type hearing aids and telephone handsets is an issue which involves a small sub-group of our hearing-impaired customers. Nevertheless, the Bell System has been mindful of this group of consumers. Voluntarily, our efforts have produced a comprehensive, yet practical, program that balances the needs of this group with our obligation to the rest of our ratepayers. The intent of our program is to provide universal access to the Bell System network. This is achieved through built-in coupling capability in high-use situations (home, work, and coin telephones) and is augmented by provision of a portable device to enable coupling capability in those few remaining instances when a non-compatible Bell telephone is encountered.

The Bell System's commitment to a proactive policy for serving disabled customers has resulted in several significant product developments which will even further enhance our ability to continue to provide compatible telephones. These include two new handsets, an improved adapter and a new receiver unit in the final stages of development.

The Bell System program for compatibility is comprehensive and effective, yet it was not prompted by a legislative mandate. Accordingly, the Bell System believes that these important consumer needs can continue to be met voluntarily in the future. However, should it be decided that legislation is necessary on an industry-wide basis, the Bell System strongly recommends the inclusion of adequate safeguards to avoid three major potential problems:

(1) Freezing technology in both the telecommunications and hearing aid industries at a 1960 level;

(2) Raising the cost of telecommunications service to all customers when there are more cost-effective ways to serve those relatively few customers who use inductive coupling; and

(3) Extending regulatory authority in a manner which imposes unnecessary added constraints on industry and technology.

Mr. Chairman, my name is Dennis J. Sullivan, Jr. I am Assistant Vice President, Product Management and Development, for American Telephone and Telegraph Company. I also chair a corporate Consumer Affairs Subcommittee with overall responsibility for services for disabled people. I appreciate the opportunity you have given the Bell System to comment on S. 604 and S. 2355.

The provision of quality telephone service at affordable rates for all our customers has been a primary goal of the Bell System since its beginning. In addition, meeting the telecommunications needs of people with hearing, vision, speech and motion impairments has been important to us for many years. In serving disabled people, we have utilized many products in our standard product line—sometimes with minor modifications—as well as specially designed or custom-built products as needed. Appendix A [1] describes many of the products and services offered by the Bell System to serve the needs of disabled customers.

Today we are focusing on the provision of telephone service to a specialized segment of our hearing-impaired customers—those who utilize inductive coupling when using a telephone.

BELL SYSTEM POSITION

Let me say at the onset, that the Bell System has been mindful of the needs of this group of consumers and has pursued a compatibiity program to provide inductive coupling capability for this segment—at home, at work or when using coin telephones. The Bell System has not required legislative stimulus to do this and accordingly believes that these important needs can be met in the future voluntarily. However, should it be decided that legislation is required on an industry-wide basis, the Bell System strongly recommends the inclusion of adequate safequards to avoid three major potential problems:

[1] The appendices referred to in this statement have been retained in the committee files.

(1) Freezing technology in both the telecommunications and hearing aid industries at a 1960 level;

(2) Raising the cost of telecommunications service to all customers when there are more cost-effective ways to serve those relatively few customers who use inductive coupling; and

(3) Extending regulatory authority in a manner which imposes unnecessary added constraints on industry and technology.

I will expand on these concerns in a moment, but first it is important to understand that the specific subject of hearing aid compatibility with inductive-type hearing aids is only a subset of a much broader issue of fundamental concern to us—hearing better over the telephone. In order to better understand the issue of compatibility and to place it in proper perspective, it is important to appreciate the larger subject and identify the many options available to people with impaired hearing when they use the telephone. For this reason, Appendix B is attached as a description of how hearing-impaired people use the telephone.

Hearing aid compatibility with telephone sets is not a new subject; it is one the Bell System has been addressing since 1964 when our dial-in-handset Trimline® [2] telephone was introduced and soon found to be incompatible with hearing aids that use inductive coupling. Background information on the discovery, evolution, and response to this issue was submitted to the 96th Congress as part of the Bell System testimony on H.R. 5022. Similar information is also attached in Appendix C for the record of these hearings.

I would now like to address each of our three concerns in more detail, and to suggest how legislation—should you believe it is necessary—can seek to prevent them.

Freezing of technology

The technology which currently provides for hearing aid compatibility was developed in the 1950's and early 1960's. Restrictive legislation could lock both the telecommunications and hearing aid industries into this outdated technology and deprive both the general public and hearing aid wearers of the benefits of advancements in future technology. The door must be left open for future development.

In the hearing aid industry, for example, inductive coupling presently offers some advantages to hearing aid wearers, but it also has some limitations. There may be other solutions to the coupling problem that are far superior to today's inductive coupling. Signal processing technology—currently available on a chip—could someday (perhaps within the decade)—through the use of noise cancellation techniques and low-frequency emphasis—facilitate vastly improved acoustic coupling in hearing aids. This technology is being used today in satellite transmission circuits. Hearing aid wearers are entitled to benefit from these and other advantages that might result from advancing technology.

This is particularly important in light of the obvious trend in future telephone technology which is moving toward low-power, lightwave and digital systems. These future systems are expected to use new types of receiver units which will offer many advantages: smaller size, lighter weight, improved voice quality reception, significantly lower manufacturing costs and correspondingly lower consumer rates. Unfortunately, these future systems will also make built-in inductive coupling capability prohibitively expensive.

It is important to remember that compatibility is the goal and that inductive coupling is the current means of achieving that goal. Consequently, any compatibility legislation should allow for future modification after a certain period of time or when it can be demonstrated that there is a practical alternative to inductive coupling. This would provide an incentive for telephone equipment manufacturers to continue to develop product improvements and also would encourage hearing aid manufacturers to explore alternative coupling technology. On the other hand, any legislative impediment to future research and development could be to the detriment of hearing aid wearers. In the face of the rapid technological changes over the last 20 years, it seems inadvisable to place undue restrictions on the future.

Increasing communications cost

My second concern is the possibility that restrictive legislation could lead to unnecessary increases in the cost of telephone service.

All existing methods for providing hearing aid coupling capability in telephones add to the cost of the telephone. I do not believe it is appropriate to require the provision of coupling capability across-the-board when there are more economical ways to serve the limited number of customers who use inductive coupling. Accord-

[2] Registered trademark, AT&T.

ing to our best estimates (see Appendix C), approximately one-half million people in this country—less than one-fourth of 1 percent of the total population—use inductive coupling. To serve this number of people, it is clearly more cost-effective to provide installed coupling capability where it is most likely to be used rather than to equip every telephone in the nation with the feature whether it will be used or not. Consequently, any legislation should define compliance as the provision of inductive coupling capability at those locations where it is warranted.

In addition, since the coupling performance of the Bell System's U-type receiver has become the de facto standard for compatibility, legislation should not change this standard but should clearly define any required compatibility so as to include those telephones now recognized as compatible—for example, the more than 100 million telephones using the U-type receiver, the 1.5 million public telephones equipped with an inductive auxiliary coil, the Trimline telephones equipped with an auxiliary coil upon request, etc. To arbitrarily change this already accepted standard would require enormous development and retooling expenses that would in turn lead to higher rates overall.

Unnecessary regulatory constraints

My third concern with compatibility legislation is that the extension of regulatory authority over this issue inevitably will bring an increase in the costs of regulation—to industry, to government and to the consumer. In addition, increased regulation is likely to cause unnecessary delays in bringing products and new technology to the marketplace. The Bell System has demonstrated the ability to provide compatible telephones without regulatory intervention, and we see no reason why the rest of the industry connot be expected to do the same.

However, in recognition of the need to monitor compliance with any legislation, we suggest that you streamline the regulatory process by simply providing for Federal Communications Commission oversight and periodic review.

BELL SYSTEM COMPATIBILITY PROGRAM

The Bell System has long recognized the special needs of disabled customers. In doing so, our objective has been to develop a comprehensive, yet practical, program that balances the needs of disabled consumers with our obligation to the rest of our ratepayers. We believe that the following hearing aid compatibility program that has been implemented is consistent with this objective and is a reasonable way to achieve inductive coupling compatibility.

First, as the result of a conversion program, all Bell System telephones associated with Public Telephone Service (coin telephones, Charg-a-call, etc.) in the United States now provide coupling capability with hearing aids that use induction coils.

Second, the Bell System's standard or general purpose telephones have always had built-in coupling capability and will continue to be available in the foreseeable future. In addition, most other business telephones and more than half of the Design Line[3] telephone models (decorator-style telephones) have built-in coupling capability.

Third, still other telephones are not manufactured with coupling capability but may be modified with a built-in auxiliary coil when requested by the customer.

Fourth, in those few instances where built-in coupling capability is not available (primarily in some decorator telephones), a small, portable, external coupling device ("telephone adapter" or "coupler") is available and sold on a non-profit basis.

The intent of this program is to provide universal access to the Bell System network. This is achieved through built-in coupling capability for the vast majority of telephone calls—which are those made at home, at the office, and at public telephone locations—and use of the adapter for those few remaining instances when a non-campatible Bell telephone is encountered.

NEW BELL SYSTEM DEVELOPMENTS

The Bell System's commitment to a proactive policy for disabled customers has resulted in several new developments that I would like to review today. These developments will greatly enhance our ability to continue to provide compatible telephones.

In 1981, we introduced a new handset which now makes all our newly manufactured business telephones compatible with inductive-type hearing aids.

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[3] Registered trademark, AT&T.

We have just concluded a trial of another compatible handset for use on our new electronic residence telephone with repertory dialing features. This handset will be available upon request in the near future.

Bell Laboratories has under development a new general-purpose receiver unit that is small, light-weight and economical. It conserves important strategic materials and promises to be as reliable as existing receivers. Initial trials with hearing-impaired people who use inductive pickups indicate that the new receiver provides coupling capability as good as the Bell System U-type receiver. This receiver has the potential to provide cost-effective compatability in new business and residence telephone manufactured by Western Electric.

Bell Laboratories has redesigned the telephone adapter. We will make this device (called the 100B coupler) available to the public by July of this year. (A photo of the new coupler is attached to this testimoney in Appendix D.) Not only is the new adapter smaller and less conspicuous, but in performance trials with hearing aids users, this new adapter enabled trial participants to hear significantly better than when using the standard compatible receiver unit. This new unit will also be provided to hearing aid users on a non-profit basis.

A key ingredient in the development of these new Bell System products was the input of hearing-impaired consumers who participated in human factors and performance trials. Among the participants were the Organization for Use of the Telephone and the Washington Area Group for the Hard of Hearing. In addition, hearing aid consultant John H. Payne provided valuable guidance through his years of experience in the hearing aid industry and as a hearing-impaired consumer. The Bell System is also participating through the Electronic Industries Association and in conjuction with the hearing aid industry to translate what has been a de facto standard into a formalized, industry-wide standard for inductive coupling.

The Bell System takes pride in its efforts to meet the need for hearing aid compatability. We are particularly proud of these new developments which will augument our responsiveness to this important group of consumers. It is important to again emphasize that these developments, along with our entire program, evolved through voluntary cooperation with consumer groups in an open marketplace environment, unrestricted by federal mandates or regulations.

Senator GOLDWATER. Thank you very much. The next witness will be Mr. Daniel Bart.

Mr. BART. Mr. Chairman, my name is Dan Bart, I am a senior attorney for GTE Service Corp. and I am appearing here today on behalf of GTE and its subsidiaries [GTE]. I would like to thank the Committee for allowing GTE to comment on S. 604 and S. 2355.

GTE is pleased to be part of any endeavor aimed at making available to the hearing impaired the benefits of developing telecommunications technology. As you begin consideration of this legislation, it is well to remember that the hearing impaired have different levels of need and that required technology, therefore, may differ accordingly.

Often, the mildly hearing-impaired can be served adequately with special speaker phones or volume adjustment features on regular telephones. For those individuals whose hearing aids work by acoustical coupling, use of a regular telephone generally presents no problem. GTE's testimony today is chiefly concerned with those hearing-impaired individuals who depend on inductive coupling of their hearing aids.

GTE subscribes to EIA's white paper which provides background information and current status of the hearing aid telephone compatibility problem. I have been advised that copies have been submitted to the committee, and, therefore, will not repeat that material now.

I would like to review, however, GTE's efforts to respond to the needs of those hearing impaired individuals requiring special equipment to use the telephone. I will then offer GTE's views on the proposed legislation.

GTE's subscriber equipment group manufactures a special handset with an adjustable amplifier that can be used to increase the sound. This satisfies the needs of some hearing-impaired users. Speaker telephones which have adjustable amplification are also available.

Since 1976, GTE has produced a special telephone receiver which provides an electromagnetic field for use with properly designed inductively coupled hearing aids. This special handset has been used on all coin telephone sets produced since January 1976 and is identified by the "blue grommet" where the cord enters the handset.

We have converted our coin telephones to blue grommet handsets as they came through repair or rehabilitation facilities. Over 97 percent of GTE's coin phones have been converted, and this program will be completed by the end of this year.

Additionally, the GTE telehone companies make available—to both their business and residential customers—the special handset with inductive coupling. If the request is made at the time of an order for new service there is no, or at most a nominal, additional charge. When the request is made subsequent to the provision of regular service and if a premises visit is required, a one-time charge may be imposed.

The GTE telephone companies also offer the Western Electric 100A hearing aid adaptor, which is the predecessor to the one you just saw there. It is a portable unit which will convert a portion of the acoustic output to an electromagnetic field for inductive coupling.

Recently, GTE telephone operations intensified its training program to insure that all employees who deal with customers are aware of the special equipment which GTE offers to meet the needs of its customers.

GTE's newest telephones, the Flip Phone and Solitaire, generate an electromagnetic field capable of inductive coupling.

GTE has also been an active participant with other equipment manufacturers and members of the Hearing Industries Association in developing a cooperative program to study the means of measurement and standardization of a magnetic field which could be used by telecoil-equipped hearing aids.

GTE believes the problem is being addressed on a voluntary basis, by the industries involved, and, therefore, legislation may not be required. However, if the Congress believes that legislation is required, then GTE recommends that the following points be addressed.

One, the legislation should focus upon the inductive coupling problem. Other forms of access are not yet totally defined, and their inclusion might be premature.

Two, technical standards, either voluntary or government-imposed, should cover both telephones and hearing aids to insure compatibility. If government-imposed, these standards should be on a Federal level and preempt inconsistent State standards.

Three, manufacturers should be allowed a transition period of at least 18 months after the standards are adopted in order to redesign, retool, finish work in progress, and clear inventories, if required.

Four, existing equipment already manufactured should be grandfathered.

Five, notice to consumers of a telephone set's compliance with the standards should be a part of the label on the package rather than on the set itself. Since the instrument is modular, which means it is assembled in pieces, the labeled portion could easily become separated from other elements during refurbishing and become part of a set for which the notice would not apply. Since all telephones are packaged for sale, the better choice is to label the container.

Six, for experimentation and new technologies to evolve, the standard ought not be applicable to all telephones; nor should technology be frozen to one specific design. For this same reason, the legislation should have a sunset provision to insure that the standards themselves do not become stagnant, but will be revisited by the Congress.

Seven, finally, the legislation should not be punitive and impose criminal penalties.

GTE believes S. 2355 comes the closest to addressing these concerns, and with slight modifications, could be supported by GTE. Thank you.

Senator GOLDWATER. Thank you very much. As you say, gee, GTE. That is a hell of a good ad.

Mr. O. J. Gusella.

Mr. GUSELLA. Mr. Chairman, my name is Otto Gusella and I am here today as chairman of the telephone equipment section of the Electronics Industries Association. I thank the committee for the opportunity to appear today for the purpose of making this statement regarding S. 604 and S. 2355. The communications division of the Electronics Industries Association represents U.S. manufacturers of telecommunications equipment.

The membership of our telephone equipment section includes all major U.S. manufacturers of telephone instruments. For that reason we are interested and have been interested for many years in the problem addressed by these bills.

The legislation now before the committee recognizes the serious problem faced by a significant segment of our population, a segment that can be expected to increase proportionately as the average age of Americans rises.

We believe that S. 604, well-intended as it is, does not present an appropriate or practical solution to the problem. Rather, it seeks a legislative solution to an engineering problem, a solution which would freeze the technology of one of our Nation's most valuable assets at a 1960 level in the mistaken belief that our society will thus be better served.

Mr. Chairman, our organization has prepared a white paper on the background and current status of the hearing aid telephone problem which we have distributed to the committee and staff. I will not burden the committee with a recitation of that material, but I hope that the members will find it useful in gaining an understanding of the actual problem without the emotional coloring which surrounds this issue. This is no place for narrow, punitive legislation and criminal penalties.

Let me tell you what the telephone industry has done without the benefit of legislation and without the threat of $5,000 fines. First of all, the industry has voluntarily converted the 1.75 million public coin telephones in the Nation to hearing aid compatible operations. These telephones are identified by a blue grommet where the cord enters the handset.

Second, we have pledged ourselves as an industry to continue to make hearing aid-compatible telephones available indefinitely for those who wish to obtain them. That pledge and the effort to convert public coin telephones led to the discovery that there is no standard hearing aid against which compatible telephones might be tested, and conversely, hearing aid telecoils are not tested against any standard telephone.

To rectify this, the telephone manufacturers, through the Electronic Industries Association, have initiated a cooperative program with the hearing aid manufacturers through the Hearing Industries Association. Under this program we are studying means of measurement and standardization of the magnetic field which might be provided by a specially equipped telephone and received by a telecoil-equipped hearing aid.

This effort, which has already consumed over 1 year and many hundreds of man hours and may well take another year, seeks first to characterize the leakage magnetic field provided by past telephone designs and the pickup sensitivity and characteristics of current hearing aids.

Given this, we hope to optimize the strength, orientation, and shape of an intentionally provided magnetic field for use with hearing aids.

The telephone industry has for many years expended its talents and resources in seeking basic knowledge about hearing, hearing aids, and hearing aid users in order to better understand all their problems, including those surrounding the use of our telephones.

Mr. Chairman, permit me to pause here to point out that modern electronic hearing aids, as well as the semiconductors which make the miniaturization of these devices, both originated as a byproduct of the American Telephone Manufacturing Industry. We believe that free enterprise and industry's sense of social responsibility are working here.

We have converted coin telephones. We are working on compatibility standards. We are cooperating with the hearing aid manufacturers.

Finally, let me address the one point which has been the source of most misinformation and misunderstanding surrounding S. 604-type legislation. This is the matter of the cost of the action mandated by S. 604. Claims have been made that the cost is nothing or 2 cents per phone per year or 50 cents per telephone.

Probably all are correct, and certainly all are wrong. We who build the telephones don't know. That may be an amazing revelation, and I hasten to explain. Today, at this instant in time, with the telephone network built around copper wires, high current, carbon transmitters, and the analog transmission, probably 80 percent of the telephones in the United State are already magnetically compatible with hearing aids, a condition S. 604 seeks to preserve forever. Thus, the cost to convert those telephones would be noth-

ing, while the added cost of compatibility for telephones produced the day after passage of legislation such as S. 604 might be $1 or $2 or more.

We do not exist, however, in a single instant of time. We are in an ever-changing continuum of innovation, and our industry has always been in the forefront of that innovation.

Mr. Chairman, the idea that freezing the technical parameters of telephone design doesn't cost anything is a myth. It is one of the most costly myths this committee could possibly consider. If legislation is required, let it deal with public coin and emergency telephones and point of sale consumer information. It has no place and fills no need in private homes and private offices.

If legislation is really required, we can honestly support S. 2335 because it allows us to get on with what we do best, the provisioning of top quality, low cost telephone equipment for all Americans.

[The attachment referred to follows:]

IS THE COST OF S.604 REALLY 1 CENT PER TELEPHONE?

In evaluating the "cost" of S.604 and similar bills, there is no particular value in calculations which consider only the present, since they ignore future technology and the future needs of the country. Yet, the cost of the proposed legislation in terms of its impact on the future is impossible to quantify. To illustrate, let us suggest a scenario that may help the reader draw his own conclusions as to the cost of this bill.

Let us presume that in 1932, or 1936 or so, Congress had, in its wisdom, recognized that many Americans, including many veterans of the Great War, had disabilities which made it difficult or impossible to use the rotary dials then being installed on telephones. Had the question at that moment in time been "how much would it cost to preserve a non-automatic, operator atended telephone system," the answer on that day would have been "nothing", or "a few cents per telephone", because that was what we had at that time. It could have been preserved at that time, but the probable result would have been a collapse of the telephone system in mid-World War II due to lack of operators. We could have then nationalized the telephone system, and today we could count it among our national treasures, along with the post office and the railroads.

OVERVIEW

Some hearing aid users make use of an inductive pickup feature in their hearing aids as a preferred means of hearing when using a telephone. This feature, often referred to as a "telephone coil" can be switched on in place of the normal microphone in the hearing aid.

The operation of the "telephone coil" depends upon a weak field of magnetism which surrounds one type of telephone receiver. That type of receiver is now being phased out of production, and is being replaced by a new type which is more efficient in producing sound, but has a weaker magnetic field. Some telephones never did produce a magnetic field strong enough to work with the "telephone coils", since they were always manufactured with a different type of receiver.

The magnetic field which occurs around some telephone receivers is an accidental characteristic, which is neither regulated nor intended for use. On the contrary, use of this phenomenon was for many years prohibited by state and federal tariffs.

Now a law is being proposed (H.R. 375 and S.605) which would require all new telephones to provide a magnetic field in order to work with hearing aids which have been represented as having "telephone coils".

Due to changes being made in the telephone industry by the government, telephone companies will no longer be providing business or residential telephones as part of their regulated responsibilities. As a result, the extra costs that would be added to telephones by the proposed law will not be absorbed by the telephone companies. Instead, they must be paid by all telephone users, including the elderly and persons more severely handicapped than those the law is intended to benefit.

There are about 1.5 million hearing aids in use which are equipped with "telephone coils". In contrast, there are about 180 million telephones in the U.S. Of these, 1.75 million are coin telephones, which have already been voluntarily modi-

fied by telephone companies to work with "telephone coils". As will be shown, not all hearing aid owners with "telephone coils" actually utilize the feature.

The telephone industry (both manufacturers and telephone operating companies) have acted responsibly in this matter by:

(1) Voluntarily converting coin telephones. There are now more coin telephones converted to work with hearing aids than there are hearing aids equipped to use them.

(2) Providing hearing aid users with compatible telephones in their homes and places of business. At present, these telephones are provided upon request by telephone companies at no extra cost. Under the new government rules, hearing aid users will be able to buy or rent compatible sets.

(3) Through their trade association, the Electronic Industries Association, U.S. telephone manufacturers are meeting with hearing aid manufacturers. Through these meetings, both industries hope to arrive at an agreed upon set of magnetic characteristics which can be used to insure that coil-equipped hearing aids will work optimally with those telephones which are specially adapted for hearing aid use.

These and other actions have helped, and will continue to help, hearing impaired telephone users. It would be irresponsible, however, to require all telephones in the future to be specially fitted for hearing aid use or to achieve the same objective by freezing telephone design at a level which no longer represents current technology.

WHAT DOES THE LEGISLATION PROPOSE?

The bill which appeared as H.R. 5022 and S. 2642 in the second session, 96th Congress, and currently as H.R. 375 and S. 604, would require all telephone equipment to be compatible with induction coil-type hearing aids. It would add the following to the 1934 Communications Act:

"REGULATION OF TELEPHONE RECEIVER DESIGN"

"Sec. 225. (a) It shall be unlawful for any person to manufacture, import into the United States, install, offer for sale, offer for rent, offer for lease, or otherwise distribute any telephone receiver or other similar telephone equipment, for use in connection with any interstate or foreign communications, unless such receiver or other equipment is designed and manufactured in a manner which permits telephone reception, through the use of such receiver or other equipment, by means of any hearing aid which uses an induction coil or any other inductive receptor.

"(b) Any person who violates the provisions of this section shall be fined not more than $5,000.00. Any person who is convicted of a second or subsequent offense punishable under this subsection shall be fined not more that $10,000.00."

Sec. 3. The amendment made in Section 2 shall apply only with respect to telephone receivers and other similar telephone equipment manufactured after the date of the enactment of this Act.

Note that the bill requires telephones to work with "any hearing aid which uses an induction coil or any other inductive receptor," without defining the terms or setting minimum performance requirements upon the hearing aid. The bill places American industry at the mercy of any importer or manufacturer who may bring in any amplifier and declare it to be a hearing aid. If the device contains at least one loop of wire, it can be said to have an "inductive receptor." Under the proposed legislation, all manufacture, distribution, and installation of telephones in the U.S. must stop under threat of criminal penalties, until the telephone manufacturers make their telephones work with the latest "hearing aid".

HISTORICAL BACKGROUND

In 1946, Sam Lybarger, a hearing-aid manufacturer, devised an inductive pickup feature for hearing aids which depended upon magnetic fields, rather than acoustic waves, to provide sounds to the hearing aid wearer. The idea was to couple inductively [1] to the weak magnetic field found near some postwar telephone handsets. Hearing aids at the time were of the "body aid" type, worn usually in a man's pocket or attached to undergarments, and clothing noise and room noises were a major problem in acoustically coupling these aids to a telephone handset.

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[1] It should be noted in historical perspective that at the time of the design of the "telephone" coil in hearing aids, inductive coupling to telephones was a violation of state and federal tariffs regulating the provision of telepone service. This prohibition remained until the FCC's "Carterphone" decision, which became effective in 1969.

Another application of the Lybarger design was to install embedded wire loops in the walls or floors of classrooms, lecture halls, movie theaters, churches and the like, and to connect the loops to the output of the sound systems serving the buildings. By the loose magnetic coupling to be obtained between the sound system loop and the hearing aid pickup coil, the user would be able to receive sound, adjusted to his or her own desired level, and free of distracting room resonances background noise.

The inductive pickup is not the panacea one might hope, since it is subject to magnetic interference from nearby devices such as flourescent lights. Under some conditions, the pickup coil may not be usable.

Although the building loop idea enjoyed some popularity in the 1950's and early 1960's, it fell into disuse, and the embedded sound loop is practically unheard of in U.S. building construction today. In the United States, special facilities for the hearing impaired, if provided at all, are being provided through F. M. radio systems and other more advanced technology.

In Europe, just the opposite was happening. Sound loops in public buildings became widely available, but most European telephones didn't, and still don't, work with hearing aid pickups. As a result, the Europeans have tended to optimize the system by increasing the power in the building loop, while decreasing the sensitivity (and cost) of the hearing aid.

It is important to remember that hearing aid coils are not normally used with telephones in Europe (or any place else for that matter) because only specially equipped telephones in those countries provide a reliable magnetic field. This special equipment is available at extra cost to hearing aid users from the government-owned telephone authorities.

In relatively the same time period, the U.S. telephone industry, having recovered from the postwar shortages and having replaced most of the telephones in the country with the highly-popular "500-type" set, began looking toward future telephones, and also to problems with the then-current design. One of the immediate problems was the "U-1" type receiver capsule used in the 500-type set, which was expensive, used too much of several critical materials, and was prone to vandal damage, especially in coin telephone locations. The result of this study was the design of the new "LB" receiver capsule, a smaller, more rugged device using less materials. Most of the improvement was achieved by improving the efficiency of the magnetic design, which in turn allowed the magnet to be made smaller, decreasing the overall size and cost of the device. The decreased size permitted a more appealing design for the new "dial-in-handset" telephones then on the drawing boards.

The new receiver was so superior in its ability to resist the abuse experienced in coin telephones that a program was mounted to provide them in such locations as a service improvement.

It was in those telephone booths that the new improved handsets, whose redesigned magnetic circuit leaked a magnetic field one-tenth to one one-hundredth as strong as the ubiquitous U-1, met the new improved hearing aids, with their "telephone" pickup coils. Hearing aid users began to complain that the coin telephones didn't work with their "telephone coils". They soon also discovered problems with the new dial-in-handset designs, and with all phones provided in the General Telephone System (GTE). The last is particularly ironic, because GTE telephones never used the U-1 receiver, and thus never did work with Lybarger's coil. Nevertheless, GTE in particular was vilified for "depriving" hearing aid users of the "right" to use their pickup coils.[2]

STAYING IN PERSPECTIVE

To keep things in perspective, the trade association of the hearing aid manufacturers has estimated that there are 3.3 million hearing aids in use, and that 45 percent of these current sales include "telephone coils". Using these numbers, there are about 1.5 million such coils available for use. In contrast, there are about 1.75 million coin telephones in the United States, almost all of which have been converted to "blue grommet" operation for use with hearing aids.

With the number of telephones specially arranged for use with hearing aid coils already outnumbering the number of hearing aid owners who can use them, it still seems reasonable that each user might wish an average of two specially-equipped

[2] Telephone companies, once this problem was recognized, embarked upon a program to retrofit their coin telephones with special coils in order to provide hearing aid compatibility. These specially fitted coin telephones, including those in GTE service areas, are identified by a blue-colored rubber grommet on the handset cord.

non-coin phones; one in his or her home, and one at the workplace or some other frequented location. This accounts for 3 million additional telephones. Since there are 180.4 million total telephones in the United States, what is really at issue is the other 175 million, or 97 of the phones, that the other 99.4 percent of the population is going to have to pay for.

HOW DOES THE PROPOSED LEGISLATION WORK IN TODAY'S SITUATION?

The nation's telephone system is undergoing a major restructuring at the hands of government. the FCC in its "Computer II" decision, the Senate and the House in their "rewrite" bills, and the Justice Department in the "AT&T settlement", have all decreed that telephone operating companies will no longer provide telephones as a part of their regulated activities. The only exception will be coin telephones, in which the telephone companies have already pledged to maintain magnetic fields.

The other 178 million or so telephones in the United States are to be leased or sold directly to consumers by nonregulated, and in most cases unaffiliated suppliers. Any notions that the additional costs resulting from the proposed legislation would fall upon anyone other than the end consumer do not reflect the reality of the current situation.

If Congress is willing to freeze the technology of the U.S. telephone network at the 1950's level as required by the proposed legislation, the ongoing costs of replacing worn-out receivers in the near term will be relatively small, as long as the 1950's style "500-type" telephone remains in use. As system needs change, however, the mandated magnetic field will become more and more expensive to provide.

It is not just the cost of these telephones which is at issue. In addition, there is the cost of freezing forever the technology of telephony in the United States. Telephony throughout the world is rapidly moving to digital technology, to keep up with ever-increasing demands for more voice and data communications. The digital network implies a low-power digital telephone, completely unlike today's telephone except for its ability to recieve and reproduce audible sound.

It is clear that American politics will not stop progress in our competitor nations. As the United States falls behind in telephony leadership for the first time since the telephone was invented, our ability to export will suffer in kind. On the other hand, with 50 percent of the world telecommunications market within our borders, subsidized offshore manufacturers will have no problem adjusting to out market.

WHICH HEARING AIDS ARE INCOMPATIBLE WITH WHICH TELEPHONES?

(For this discussion, we speak only of compatibility by inductive coupling. All hearing aids are compatible in some measure with all telephones when coupled acoustically, but results are less satisfactory for some users.)

First off, only about 37 percent of the hearing aids being sold in the United States are even equipped with "telephone" coils. As a result, the remaining 63 percent are not inductively compatible with any telephone, anywhere. In addition, since some import brands have coils in every aid (to work with European loop systems), it is probable that many buyers among the 37 percent don't actually use their "telephone" coils.

The telephone handsets which appear to work satisfactorily with most pickup coils are "500-type" sets equipped with U-1 type capsules. This design, introduced more than 20 years ago. was manufactured by Western Electric, and manufactured under license by Northern Telecom, ITT and Stromberg-Carlson.

Pickup coils do not work with standard-production sets produced in the last 40 years by GTE Automatic Electric, the manufacturing arm of the General System.

In Europe, hearing aids do not couple inductively with telephones in the United Kingdom, Spain or Italy, since these countries use the highly-efficient "rocking armature" design receiver capsule. In Germany and Scandinavia, some marginal but useful operation may be experienced on short loops only, particularly with U.S.-made hearing aids, some of which have more sensitive coils than found in European aids. The Benelux countries use a receiver which will probably work in most cases with American hearing aids, although the governments do nothing to insure compatibility. We have no data on the general population of telephones in France, but it appears that new sets there will not couple to hearing aids.

In general, the attitude of telephone administrations throughout Europe is that telephones are to be used acoustically, and no steps whatever will be taken to provide for magnitic coupling to the general population of telephones. In Scandinavia and Germany, hearing aid users may obtain at extra cost telephones which are specially equipped to provide a strong magnetic field for hearing aid coupling.

WHAT HAS THE TELEPHONE DONE?

Because of the large number of telephones in use and their durability, it may be another 20 years or more before telephones with U-1 type receivers become generally unavaliable. During that period, which certainly exceeds the wearout period of most hearing aids, this variety of instrument can be installed in the residences and places of business of those hearing impaired customers who use hearing aids with "telephone coils".

More importantly, telephone companies some time ago embarked voluntarily upon a program to provide hearing-aid compatible coin telephones at all public telephone locations. These specially equipped telephones are readily identified by the blue rubber grommet found at the point where the cord enters the handset.

Telephone manufactures have also developed special loop coils which can be installed in telephones equipped with LB type receivers, when older style receivers are unavailable or cannot be fitted on a particular model of instrument. In particular, it should be noted that the General Telephone Companies make these coils available to hearing aid users even though their telephones have never provided a magnetic field.

It should be remembered that the hearing-impaired have different levels of need. Often the mildly hearing-impaired can be served adequately with special speaker telephones of volume adjustment features on regular phones. Since there is a finite loss in the acoustic output power level on telephones equipped with loop coils, their use could affect performance to the mildly hearing-impaired who do not use hearing aids, or who use acoustically coupled hearing aids, as well as to non-impaired users.

Finally, the telephone companies have long offered, at cost or free when necessary, a small portable adapter which converts the acoustic output of a telephone handset to a magnetic field for use with hearing aid pickups. This device allows any telephone to be used with any inductive pickup hearing aid anywhere at any time. Opinions differ as to why only 13,000 hearing aid users have taken advantage of this offer. It does appear that the device had a poor reliability record and short battery life, although a later and technically improved model offered in Canada has met a similar response. The main objection seems to be the inconvenience of using the adapter at all, in spite of its obvious value to the hearing aid wearer. We note that Sears, Roebuck is now offering a version improved in appearance and function in their Home Health Care Catalog for $29.95.

WHAT IS THE TELEPHONE INDUSTRY DOING FOR THE FUTURE?

At present, American telephone manufacturers are working through an engineering committee of the Electronic Industries Association to quantify and specify scientifically the strength, shape, and orientation of a magetic field which will emulate that found in old-style receiver elements. We are in consultation with the hearing aid manufacturers, and are proposing a specific magnetic field strength and orientation against which both magnetically equipped telephones and hearing aids could be designed. If the effort is successful, the result will be stated in a voluntary industry standard to be published by EIA. The standard will be used by industry to provide compatible magnetic fields in special-purpose residential and business telephones for purchase by individual or institutional users wishing to provide this feature, as well as in blue-grommet public telephones.

Senator GOLDWATER. Thank you very much.

One thing that keeps creeping in to all of your testimony is the fear of legislation that would restrict or dampen research and development. I can assure you that will not be a part of any legislation that comes out of this committee. I have ofen commented that the communications industry of this country spends more money on research and development than the U.S. Government spends on its total research and development.

Mr. Sullivan, you mentioned the low frequencies used in satellites might have some bearing on this whole problem. Let me ask, are you researching that up at New Jersey now?

Mr. SULLIVAN. Yes, Mr. Chairman. The satellite technology, because of the time lag, requires that we suppress echoes and that we cancel noise, and what I was using as an analog of that same tech-

nology, which is now operative in satellites, as being potentially extended to the hearing aid industry.

I didn't want to mislead to the point that there has been some great discovery and that there are hearing aids that have been built with them, but we see the logical connection of that technology and I was using it as a for-instance of not precluding that coming about.

It is my opinion that the long-term solution, the way technology in general is going with lightweight and digitalization, that acoustic coupling is going to be in answers at some point downstream, and we are researching along those lines.

Senator GOLDWATER. Are you doing work on that now?

Mr. SULLIVAN. Yes.

Senator GOLDWATER. To your knowledge, is the compatibility problem becoming bigger or smaller?

Mr. SULLIVAN. Well, I submitted in my testimony a statistical breakdown taking the 16 million people who have hearing impairments, and about one-half of them have those impairments in both ears. That figure has grown over the last 10 years and probably will continue to grow as people live longer.

Further breaking that down, we have about 2.8 million people who wear hearing aids and about .93 million who wear hearing aids with a T-switch, and only about one-half of them use them with the telephone. So I think that the problem will grow in another manner. There is more growth in the in-the-ear type hearing aid, which doesn't have room for a T-coil, and that is going to be an increasing problem.

So I think it is all those things combined that support my contention that the long-range solution has another technological route rather than one that was begun 20 years ago.

Senator GOLDWATER. This is maybe a little ticklish-type question, but no one is quite sure what the A.T. & T. of the future will look like. It is clear, however that A.T. & T. will be restructured. What effect, if any, will this have on telephone service for the hearing impaired?

Mr. SULLIVAN. That is a very appropriate question, Mr. Chairman, and we have thought about it a great deal. I happen to chair a committee for the Bell System responsible for services to disabled customers, and I do not regard that chairmanship as just a job. I believe it in, and we have accomplished quite a bit.

It is our intention from a policy standpoint to continue that regardless of what our new structure is. Having said that, I believe that the subsidiary portion of our business will have to move from a nonprofit basis to one of profit. There will be no other source for the subsidization of activities for hearing-impaired customers.

I think further that it would be a reasonable expectation for any industry to have a profit, because if they don't, you take away the incentive for research and development and advancing technology. So that would be the significant change.

Senator GOLDWATER. And before I leave you, do the local companies have this gadget?

Mr. SULLIVAN. Yes. These are available in all our disabled centers, and as I mentioned, they are available now for demonstration

and they will be out and available to the public in July of this year.

Senator GOLDWATER. Thank you. You just sold one.

Mr. Bart, to your knowledge, are there any antitrust considerations that may be preventing phone or hearing aid manufacturers from setting voluntary industry standards?

Mr. BART. Yes, Mr. Chairman, I believe there are, to the extent that there is case law that if a trade association sets standards for the purpose of anticompetitive conduct. There is a case that held in, I think, the heating and air-conditioning area that a trade association member used a standard for the purpose—as it turned out—of excluding one of their competitors. In that case I think there are antitrust considerations.

However, if the purpose is just a cooperative effort to set a national standard, and the purpose of the standard is not anticompetitive conduct, then I do not believe that that would be prohibited by antitrust law.

Senator GOLDWATER. Do you think it is an issue that we should address in legislation?

Mr. BART. I believe the trade associations involved would prefer that either the act itself or the legislative history point out that Congress wants this voluntary type of cooperation in standard setting.

Senator GOLDWATER. Could you describe how reconditioning and resale of telephone equipment works and how that relates to the labeling requirements of S. 2355?

Mr. BART. Certainly. Telephones when they come in for reconditioning are totally stripped down into individual pieces, broken apart, cleaned, and then at the end of the pipeline, reassembled again. In that process, components may not necessarily end up with the telephone with which they started. The transmitters and receivers go into bins where they may be retested to original manufacturing specifications and reassembled.

One of our concerns with the labeling—if I can borrow this hardware here—is the fact that handsets are modular, which means they just unplug. If the label was on the base of the telephone, then it is possible that the label would match up with a handset which was not compatible. If you try to remedy this by putting the labeling on the handset itself—similar to the Western Electric label that is on here—it would probably be molded into the particular handset.

Now, if that handset inadvertently had a receiver inserted into it which was one of the incompatible receivers, the consumer might be misled, because of the molded label, that this is a compatible handset, whereas, the receiver inserted actually is not compatible.

Now, there are a lot of refurbished telephones on the market, other than the ones the telephone companies themselves provide. A lot of the telephones in the retail market are actually reconditioned telephones, and it is our feeling that by requiring labeling on the instrument, refurbishers in the garage shops are not going to take the time to buff out or remove this molded labeling.

However, all telephones we have seen are packaged for sale, and, therefore, if the labeling were on the container itself, we think that

is a reasonable way to get the point of sale information across to the consumer.

Senator GOLDWATER. I agree with that.

Thank you very much.

Mr. Gusella, I had a question that I was going to ask you, but you have answered it in your addendum relative to the cost is really 1 cent per telephone. So instead of having you testify, we will make this a part of the record as if you gave it.

Mr. GUSELLA. Thank you very much.

Senator GOLDWATER. Would you want to comment on the problems that we might run into in this general field coming from the telephones that are manufactured in Taiwan and Japan or other countries?

Mr. GUSELLA. Yes, sir. Well, currently we see incompatibilities. In the industry there are voluntary standards now for talk circuits, ringing, noise. Currently we are getting offshore telephones that are as much as 10 dB's down in the talk circuit, and with that lessening of standards, they are able to undersell U.S.-manufactured products that are generally building a much higher quality product.

Without some form of standardization, be it FCC-governed or Congress-governed or whatever, I think offshore manufacturers will continue to ship in the least expensive performing piece of apparatus they can get by with.

Senator GOLDWATER. Do you think it would be proper to require these offshore manufacturers to meet the specifications that the American public expects of you, particularly in the field of compatibility?

Mr. GUSELLA. I do, yes, sir.

Senator GOLDWATER. Well, I think it is a good point. I never thought I would say that. I have been in this communications since I was 13 years old, and what those people overseas do is unbelievable.

Mr. Gusella, the phone manufacturing industry consists of more than just A.T. & T. and GTE. Are the concerns of other phone manufacturers similar to those expressed today or do they have more or less problems with compatibility based on their size and resources?

Mr. GUSELLA. Prior to me making this statement, we contacted each of the manufacturers, and that includes Stromberg-Carlson, ITT, Northern Telecom, who manufactures in the United States, ATC on the west coast, and they all shared this concern and support this testimony.

Senator GOLDWATER. Well, I want to thank each and every one of you who come here to testify today. We have one more person to hear. All of you have contributed to this. I feel very certain that within a relatively short time we will have legislation reported to the floor, and I see no reason to expect that we are going to have difficulty with it.

So thank you, and I will ask Mr. Sheldon Hauck, executive director of the Hearing Industries Association, to come forward, and he has with him Mr. Harry Teder, HIA Standards and Technical Committee.

You may proceed as you wish. We will make your statement a part of the record, and you can go as you want to.

STATEMENT OF SHELDON J. HAUCK, EXECUTIVE DIRECTOR, HEARING INDUSTRIES ASSOCIATION, ACCOMPANIED BY HARRY TEDER, HIA STANDARDS AND TECHNICAL COMMITTEE

Mr. HAUCK. I will indeed, Senator, and I would also like to add that I think as time allows, Harry Teder here, who is chief engineer for the Auditory Instruments Division of Telex, is probably one of the most qualified and experienced persons in this room today and will be able to answer many of the technical questions that have been posed this morning.

The Hearing Industries Association has a longstanding and very keen interest in this subject. Our members manufactured over half of the 800,000 hearing aids sold in the United States last year, and of those, about 45 percent were equipped with coupling devices.

I might add that they can be incorporated into almost any make or model of hearing aid at the request of the consumer at the time of purchase.

I would like to especially note that we support the opinion and comments of EIA in its testimony before you this morning. We are in favor of voluntary efforts on the part of the telephone equipment and hearing aid manufacturers to develop the highest technical standards for compatibility and adapt those standards into the instruments they manufacture. If you decide that legislation is needed, our industry would support the intent and scope of S. 2355 rather than S. 604.

On a positive side, the reasons why we support S. 2355 as being a more reasonable and effective solution are these: First, the telephone industry has already equipped virtually all the public phones in the United States with devices that make them compatible for use with hearing aids, a voluntary effort and supported by adequate public information efforts, in our view.

Second, hearing aid-compatible telephones for individuals with hearing impairments are available for home or office use by requesting those phones of the telephone company as you have heard in previous testimony today.

Third, the Telecoil-equipped hearing aids are readily and easily available at minimal cost to all hearing aid users. Users only need to request the feature at the time the aid is being purchased.

Fourth, and perhaps most importantly, as others have mentioned, HIA and EIA have been working for well over a year to develop a compatible standard on a voluntary basis, and I don't see any reason, for antitrust reasons or other, why this process should not be allowed to run its course. It is almost completed, it is in the near term, perhaps 1 year, and we would like to finish that work.

We are concerned about two specific sections of S. 2355, however: That is, delegation of authority to the FCC to develop a standard. That is because we would like to finish the work that we have already commenced, and there is no reason why that will not come to fruition rather soon.

Our other one is section 225(d) of the proposed bill. Just for clarity, we would like to have in the record that the labeling, the aids

are very small and personal, and once equipped with the coupler, the user obviously knows that it has a switch on it, and we would think that including the information on the packet of general information, user information given to the purchaser at the time of purchase would suffice rather than, as it could be read in the bill as it is presently drafted, that it has to be stamped or labeled on the hearing aid case itself.

Other than those comments, we support the intent and substance of S. 2355 if these two specific modifications we are mentioning are incorporated in the final draft of the bill.

Thank you.

Senator GOLDWATER. Thank you very much.

These questions can be answered by either one of you.

Do you have testimony you would like to give, Mr. Teder?

Mr. TEDER. No, sir. I would be prepared to answer questions, though.

Senator GOLDWATER. Do you agree with previous testimony that acoustic coupling is the only long-term solution to the compatibility problem?

Mr. TEDER. Yes; except that the technology at this point is not available. I think it is only beginning to be addressed within the confines of the size and battery consumption of hearing aids. In other words, we are talking about microprocessors which are much too large at this point to be included in the hearing aids, but 5 or 10 years from now, possibly.

You perhaps know about the feedback problems in hearing aids. I am sure your wife has seen it, and I can demonstrate it on myself. That, too, would be a parallel situation to the telephone problem, the hearing aid feedback problem, as well as the telephone feedback problem which is induced by placing the telephone next to a hearing aid. You can pick it up like this.

So yes, I can see the solution coming, but not in 4, 5, or 10 years.

Senator GOLDWATER. For either one of you, does your association have any estimates of the number of hearing aids in use in this country, the number of those aids which are telephone-coil equipped and the number that were to actually use the coil for the telephone? That is a tough one.

Mr. HAUCK. We have no way, obviously, of measuring how many are used that are equipped. We have just tabulated, as part of the development of the standard, as part of the inquiry, before these hearings were announced, of sales in 1981. It was impractical to go back before then because the records had to be derived, but we found that 45 to 50 percent of the aids manufactured, or sold, rather, in the United States last year were so equipped.

Mr. TEDER. I would like to correct one statement which was made, which was that in-the-ear hearing aids are not compatible with telephones. That is not true. You can install a telephone coil in an in-the-ear hearing aid, but due to the size restrictions, they tend to be less efficient than the behind-the-ear aids.

Senator GOLDWATER. We have your answer to that other question. You had already given it to us in writing. We will make that a part of the record.

What is the difference in cost between an aid equipped with an induction coil and one without a coil?

Mr. HAUCK. We didn't do a survey, but a reasonable considered response to that is up to $10, and again, that is a function of the marketplace, of competition. It is an additional feature that is requested, that is, if you will, factory installed, and the dispenser of the aid, the fitter, may absorb all or part of the cost. But the basic cost, I think we are in agreement, runs up to $10, a one-time installation. But it has to be at the time of purchase because you cannot retrofit them. It is very expensive to retrofit aids in different cases and different arrangements.

Senator GOLDWATER. What efforts has your industry been making to inform consumers about the availability of compatible phones?

Mr. HAUCK. Well, to be quite honest, Senator, the industry itself through the association has not undertaken any direct efforts. It would be misleading if I suggested that they did. One has to presume that in the dispensing of aids, that the use of telephones are a common occurrrence to most people, and that is a part of the whole fitting procedure, what kind of work you do? What environments are you in? What do you need? What are your special needs, are you going to wear the aid all the time or partial, et cetera? Is it just one ear or both ears, and all these questions that go into the analysis of the fitting, the diagnosis, rather.

That is probably, I would guess, the only point that, at least within the industry per se, that that subject is probably addressed with the user.

Mr. TEDER. It depends on the area of the country. Washington does not work. The telephones in Washington do not work. The telephone in my hotel room didn't work. All the telephones, to my knowledge, in Minnesota, do work.

[The statement follows:]

STATEMENT OF SHELDON J. HAUCK, EXECUTIVE DIRECTOR, HEARING INDUSTRIES ASSOCIATION

Mr. Chairman, members of the subcommittee. I am Sheldon J. Hauck, Executive Director of the Hearing Industries Association (HIA), headquartered in Washington, D.C. Accompanying me is Mr. Harry Teder, Chief Engineer for The Auditory Instruments Division of Telex Corporation of Minneapolis, Minnesota. He is also a member of the HIA Standards and Technical Committee and fully experienced and qualified to comment on any question relating to the technical or scientific aspects of the legislation before this committee today.

The industry we represent—the manufacturers of hearing aids and components—has a very keen and long-standing interest in the subject and the proposed legislation before this committee today.

Members of our asociation who manufacture hearing aids last year supplied over half of the 834,000 hearing aids which were sold in this country. Based on a recent HIA survey, the results of which have previously been provided to the committee staff, we can report that approximately 45 percent of the hearing aids sold in the United States in 1981 were manufactured with coupling devices to assist hearing impaired individuals in using the telephone. The coupling device, commonly referred to as a telecoil, may be incorporated into virtually any make or model of hearing aid at the request of the consumer.

Mr. Chairman, may I open my remarks by noting that HIA supports fully the opinion and comments of the Electronic Industries Association (EIA) in its prepared testimony before you this morning. We too are in favor of continued voluntary effort on the part of the telephone equipment and the hearing aid industries to develop the highest technical standard for compatibility and incorporate that standard in the instruments that they manufacture. If the committee deems legislation necessary, the hearing aid industry would support the intent and scope of S. 2355, not S. 604.

On a positive note, therefore, may I address the reasons why HIA supports S. 2355, rather than S. 604, as being a more reasonable and effective solution to the problem of providing hearing aid wearers with telephone access.

First—The telephone industry has already equipped virtually all of the public telephones in the United States with devices that make them compatible for use with hearing aids. This effort was voluntary on the part of the telephone industry and was supported by adequate public information efforts.

Second—Hearing aid-compatible telephones for individuals with hearing impairments are available for home or office use by simply requesting the local telephone operating company to provide such instruments. The telephone industry has assured us that this equipment will continue to be available until that future time when superior telephone and hearing aid technologies, which are evolving continuously, provide an even more effective solution.

Third—Telecoil-equipped hearing aids are readily and easily available at minimal cost to all hearing aid users. The purchaser of a hearing aid need only request this feature in the aid being purchased.

Fourth—The telephone equipment industry and the hearing aid manufacturing industry, through HIA and the Electronic Industries Association, have been working with dedication and perserverance to develop a standard which would be capable of universal application throughout the United States in production of all equipped telephones and all hearing aid telecoils. The results of those labors is nearing fruition.

While the hearing aid industry would support the intent of S. 2355, we are concerned with two specific sections of the Bill. Specifically, with respect to Sec. 225(c) of S. 2355, we object to legislation that delegates to the Federal Communications Commission (FCC) the authority to devleop its own standard for telephone telecoil compatibility.

We feel it is imperative that the voluntary industry efforts now nearing completion to develop a standard for the maximum consumer benefits should be allowed to continue until the desired results are obtained and can be incorporated both in new telephone equipment and new hearing aid technology. If we are allowed to finish our work in this area, which I submit is near-term and not long-term, all hearing aid consumers will benefit. Neither the consumer, the hearing aid manufacturers, nor the telephone equipment companies will have to bear, in the final analysis, the brunt of the economic costs of proceeding in any other fashion.

We do not feel that the FCC should be given either the authority or the mandate to undertake the development of such a standard in view of the responsible initiatives already underway on the part of the industries involved.

Our other concern relates to Sec. 225(d) of the proposed bill. We strongly urge that the intent of the mandate expressed in sub-section (d) regarding labeling of equipment and packaging materials could be met by including such information with the other consumer information that accompanies each hearing aid at the time of sale. This user information includes information voluntarily supplied to ensure beneficial hearing aid use and additional information required by the U.S. Food and Drug Administration. We urge that the legislative history of this legislation and indeed the legislation itself, would not suggest that the hearing aid case itself be so identified. It simply is not a necessary or practical proposal, given especially the small size of today's hearing aid.

Mr. Chairman, I trust the committee will carefully note and consider our comments in reporting out its final draft of this proposed legislation. The Hearing Industries Association can support both the intent and the substance of S. 2355 if the modifications we have noted in our testimony here today are incorporated in the final language of the Bill.

Thank you, Mr. Chairman. Mr. Teder and I are available for any questions you may care to pose on this subject .

Senator GOLDWATER. Well, I thank you, as I thanked the others. This meeting will stand adjourned.

[Whereupon, at 10:45 a.m. the hearing was adjourned.]

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

NATIONAL RETIRED TEACHERS ASSOCIATION,
AMERICAN ASSOCIATION OF RETIRED PERSONS,
Washington, D.C., January 22, 1982.

Mr. DAVID SAKS,
Organization for Use of the Telephone, Inc.,
Owings Mills, Md.

DEAR MR. SAKS: The National Retired Teachers Association and American Association of Retired Persons are writing to express our support for S. 604 and H.R. 375, legislation designed to require all telephone companies to use only telephone receivers that work with hearing aid telephone pickups, and to commend you for your perseverance on behalf of the nation's hearing impaired citizens to see that this legislation is passed.

As we wrote in earlier testimony submitted to the House Subcommittee on Communication, the Associations are concerned that incompatible telephone equipment is restricting certain individuals' access to the use of the telephone—an integral part of everyday life.

Hearing impairment among the elderly is a widespread disability which threatens the quality of life of our elderly by inhibiting their communication with others. The hearing aid, although not a panacea, is a rehabilitative device which provides assistance to many hearing impaired elderly. Hearing aids should serve the hearing impaired elderly in as many different situations as possible; using the telephone is one method of communication which should not be denied this population. It has far-reaching implications in such problem areas as freedom from isolation, emergency protection, equal employment opportunities, and freedom of mobility.

For example, there are elderly individuals who suffer from severe chronic conditions which restrict their mobility and cause them to be confined to their homes. For them, the telephone is an essential tool for communication. It may be the only or major means for them to have contact with others and thereby provide protection from social isolation. In an emergency situation, the telephone may be their only resource for obtaining assistance.

Again, NRTA and AARP support S. 604 and H.R. 375 and hope that this legislation will be acted upon favorably during this session of Congress.

Sincerely,

PETER W. HUGHES,
Legislative Counsel.

DISABLED AMERICAN VETERANS,
Washington, D.C., March 16, 1982.

DEAR MR. SAKS: Thank you for your recent letter regarding H.R. 375 and S. 604—two bills which are designed to make America's telephones accessible for the hearing impaired.

DEAR MR. SAKS:

Thank you for your recent letter regarding H.R. 375 and S. 604—two bills which are designed to make America's telephones accessible for the hearing impaired.

In reply, I am pleased to inform you that on February 22, 1982, the National Executive Committee of the Disabled American Veterans adopted a resolution calling on our organization to support the passage of these measures. Enclosed, please find a copy of our resolution to this effect.

I would very much appreciate knowing of any further action taken by your organization and please feel free to contact me at any time regarding this important issue.

Sincerely yours,

CHARLES E. JOECKEL, Jr.,
Deputy National Legislative Director.

COMMUNICATIONS WORKERS OF AMERICA, AFL–CIO,
Washington, D.C., December 3, 1981.

To: Congressmen Cleve Benedict, Thomas J. Bliley, Jr., Marc L. Marks, Congresswoman Barbara A. Mikulski, Congressmen Don Ritter, and Doug Walgren.

In your deliberation on the Telecommunications Competition and Deregulation Act of 1981, please consider some requirement that would encourage equipment suppliers and manufacturers to produce telephone equipment that would be compatible for hearing aid users.

CWA supports the efforts of the Organization for Use of the Telphone, Inc. [OUT] toward equipment design and manufacturing that would assist the millions of Americans who are hearing aid users.

Sincerely,

GEORGE R. STRICK,
Vice President.

BOARD FOR HOMELAND MINISTRIES,
New York, N.Y., October 19, 1981.

Hon. JOHN D. DINGELL,
House of Representatives,
Washington, D.C.

DEAR REPRESENTATIVE DINGELL: This letter comes to you from the National offices of the United Church of Christ, one of the major Protestant denominations. It is written in support of H.R. 375.

This denomination has a large network of persons with disabilities and those working with them. One of its major concerns has been to assure telephone accessibility to all persons with hearing impairments. "Incompatible" telephones make no sense in a day when jobs are so dependent on use of the phone. More importantly the social isolation caused by inability to use the phone is inexcusable in the modern American society.

We trust you will do all in your power to get this bill on the floor with the votes to pass it now before any further impairment to the approximately two million Americans who are "phone deaf". It is estimated that the great "extra cost" is infinitesimal, (slightly over one cent per year per telephone). It is now up to those of you in Concress who have the power to pass this legislation to act.

We are counting on you.

Faithfully yours,

HELEN WEBBER,
General Secretary.

AMERICAN COALITION WITH DISABILITIES, INC.,
Washington, D.C., January 29, 1982.

Hon. CHARLES MCC. MATHIAS, Jr.,
U.S. Senate,
Washington, D.C.

DEAR SENATOR MATHIAS: This is to ask for your support for S. 604, to amend the Communications Act of 1934 to provide that telephone receivers may not be sold in interstate commerce unless they are manufactured in a manner which permits their use by persons with hearing impairments.

It is perhaps difficult for persons who can communicate without hearing aids to realize the intense frustration for the many hearing aid users when they cannot make or receive telephone calls. This occurs fairly often because one-quarter of the telephones in this country lack the magnetic radiation to provide such service. Cost is not really the problem. It costs slightly over a cent per year per telephone.

Unfortunately, we cannot in this instance rely upon the marketplace to meet this need because we are dealing here with utilities. Only by the intervention of Con-

gress can those with hearing aids take this essential step toward total Communication.

Thank you for your consideration.

Sincerely,

REESE ROBRAHN,
Executive Director.

NATIONAL HEARING AID SOCIETY,
Livonia, Mich., November 11, 1981.

Mr. DAVID SAKS,
Organization for Use of the Telephone,
Owings Mills, Md.

DEAR DAVID: I'd like to thank you for your letter of October 9th, and apologize for my tardiness in responding. As I'm sure you know, our 30th Anniversary Convention just recently concluded. The many demands of that event just totally dominated my time for the past several weeks.

We want you to know that the National Hearing Aid Society continues to support H.R. 375 and S. 604. It has always been, and shall continue to be, our conviction that those Americans using hearing aids have a right to the same access to the telephone that non hearing aid users enjoy.

We shall continue urging our membership to fully support H.R. 375 and S. 604. In addition, we will keep our members informed on the progress of this legislation in Congress. If you feel it would prove beneficial, we'll contact key members of the House and Senate soliciting their support of these bills. Should you desire this, I trust you'll inform us of any particular individuals we should focus on.

I plan to make every effort to attend the THIC Forum in March of next year. I look forward to meeting you then.

Sincerely,

JAMES P. LOVELL.

NATIONAL ASSOCIATION OF THE DEAF

RESOLUTION

Whereas there are 16 million hearing impaired citizens in the United States; and,

Whereas hearing impaired persons who use hearing aids that have telephone "pickup switches" are unable to use more than 43 million telephones in the United States; and,

Whereas technology exists in the telephone and hearing aid industries to facilitate the use of the telephone by persons who use hearing aids; and,

Whereas technology that permits the use of the telephone pickup switch on hearing aids has proven to be economical and beneficial to all citizens; and,

Whereas legislation is being considered in the Senate and in the House of Representatives (S. 604 and H.R. 375) to ensure full access, and unencumbered access, to telephones for persons who use hearing aids: Therefore, be it

Resolved, That the National Association of the Deaf strongly supports the passage of S. 604 and H.R. 375; and, be it further

Resolved, That the United States Congress is urged to enact this proposed legislation on a priority basis.

FEDERAL COMMUNICATIONS COMMISSION,
WASHINGTON, D.C., MAY 28, 1982.

Hon. BARRY GOLDWATER,
Committee on Commerce, Science, and Transportation,
U.S. Senate, Washington, D.C.

DEAR SENATOR GOLDWATER: On May 6, 1982, you made two requests at the hearing before the Subcommittee on Communications about S. 604 and S. 2355, bills on telephone compability with hearing aid devices and other telephone access for those with hearing impediments. This letter responds to them.

First, you requested that we submit suggested language to clarify, and expand, if necessary, our jurisdiction so that the Federal Communications Commission would have the authority to discharge responsibilities assigned to it under S. 2355. I would suggest that subpart 225(a) be amended to read as follows: The Commission shall establish such regulation governing the manufacture, sale, lease or interconnection of terminal equipment as are necessary to ensure reasonable access to telephone

service by persons with impaired hearing. (The underscored words are the suggested additional ones.)

This language would be helpful if the Commission were to regulate hearing aid compatability of various classes of telephones, such as hospital telephones, and to establish labeling and packaging requirements. As you know, in the Second Computer Inquiry the Commission deregulated the provision of terminal equipment by public utility telephone companies. We have taken the position that we have, at present, limited jurisdiction over terminal equipment. Thus far, we have exercised jurisdiction over such equipment very cautiously. For example, in our Part 68 program discussed below, we focus solely on the technical design of terminal equipment so as to ensure that it can be physically interconnected with, and will not harm, the telecommunications network.

We have also considered whether asserting jurisdiction over either telephone equipment consumers or the telephone companies with which terminal equipment is interconnected is a good way to implement S. 2355. However, under this approach we could not enforce the labeling and packaging requirements in subpart (d). In addition, except for regulating pay telephone offerings of telephone companies which we now have the jurisdiction to do, we have concluded that it would be very difficult to enforce requirements against telephone companies that only hearing aid-compatible equipment be interconnected. Since under the Second Computer Inquiry telephones will not be part of public utility service, telephone companies would not routinely be able to determine whether a subscriber's terminal is compatible with the needs of the hearing impaired. We have also decided that enforcement of a regulation prohibiting installation of non-hearing aid compatible equipment against consumers would be difficult.

It is possible to require finite classes of consumers, such as municipalities, hospital and nursing home owners, and owners of elevators with emergency telephone equipment, to interconnect only compatible equipment. If the Senate chose to take this approach, subpart (b) of S. 2355 would have to be modified so as to be directly applicable to owners of hospitals and other public places. Under this approach, the Commission would still need a grant of broad jurisdiction over manufacturers under subpart (a), or a somewhat narrower grant under subparts (c) and (d) to establish technical standards or labeling requirements.

You also inquired at the hearing about the compatibility of imported terminal equipment with the telecommunications network. Our Part 68 program sets uniform technical standards to protect the telephone network from any harm which would be caused by interconnection of defective terminal equipment. It applies to all terminal equipment, manufactured here or abroad, to be installed in the United States. Under the Part 68 program this Commission registers terminal equipment which complies with our technical interconnection standards. Consumers who buy equipment with an FCC registration number are, then, certain that they can connect this equipment with the telephone network. At present, of the approximately 900 registration grantees, about 34 are U.S. subsidiaries of foreign companies and about 58 are foreign companies located abroad. We have no direct information as to what percentage of terminal equipment installed in this country is of foreign origin.

If I can be of further assistance to you on these or any other matters, please do not hesitate to contact me.

Sincerely,

LEON M. KESTENBAUM,
Deputy Chief (Policy), Common Carrier Bureau.

STATEMENT OF ROY LECHTRECK

S. 2355, according to Senator Cannon, amends the Communications Act of 1934 "to provide that persons with impaired hearing are insured reasonable access to telephone service."

Although the Organization for Use of the Telephone appreciates the sections of S2355 which require that telephones be labeled as to whether or not they are compatible with hearing aids and which require that pay phones be compatible with hearing aids, we strongly oppose the other provisions of the bill. Incompatible pay phones are being replaced (primarily through the efforts of the Organization for Use of the Telephone), so this provision is not as important as it once was. But the rest of the bill is worse than nothing, and I would not even call it "tokenism." It seems to me that the pay phone issue is being used as a device to get support for the rest of the bill.

Giving the FCC power to do what they already can do is not progress, really. In fact, except for pay phones, the wording of the bill only requires "reasonable access to telephone service by persons with impaired hearing." What is reasonable access? The introductory remarks by Senator Cannon (C.R. April 1, p. S3285) claims that bill (S. 604) is too specific, and would "impede new technological development." Obviously, "technological development" takes precedence over the needs of the hearing impaired! The last sentence of the bill even forbids the FCC from adopting regulations which even "discourage" the development of new technology! The bill says that the FCC "may" require other telephones (non-pay phones) "frequently used by the public" to be compatible with induction coil hearing aids, and it "may" establish "technical stands" for compatibility. But none of this can "discourage" new technology!

Thus the FCC is forbidden to do anything to upset the phone manufacturers! Really! And the FCC regulation must consider the costs and benefits their regulations impose on all telephone users. Supposedly, if a compatible phone costs more or discourages new technology, the FCC could forbid compatibility!

Even if the above objections were eliminated, we would still oppose replacing the mandatory requirements of S. 604 with the regulatory process of the FCC. How do we know the FCC will even exist 5 years from now, or have adequate funding? And the FCC must be one of the worst-run regulatory agencies in Washington. Their "license-renewal" process is a joke. And for years they debated whether or not to have new low-power TV stations, and will spend many more years before they grant even one-tenth of the licenses they say may be granted.

Obviously, the bill was drafted by someone who put into the bill what the phone companies wanted. (Apparently, OUT has gotten so much support for S. 604 that the phone companies thought they had to come up with a counter proposal.) We think the best interests of the hearing impaired would be served by S. 604, or no law at all at present, rather than S. 2355 which would tie the hearing impaired into an obsolete and one-sided rulemaking process.

STATEMENT OF WILL GROSS, PRESIDENT, WASHINGTON AREA GROUP FOR THE HARD OF HEARING*

The Washington Area Group for the Hard of Hearing is a consumer-oriented, nonprofit organization of hard of hearing adults in the Washington, D.C., northern Virginia and southern Maryland areas. It promotes better communication for hard of hearing persons. We urge this subcommittee to support S. 604. This bill will be of substantial benefit to many hearing-impaired people by assuring them continued access to the nation's telecommunication system.

Until recently, hard of hearing people have been able to use conventional telephone receivers by means of inductive devices installed in many hearing aids. These devices are known as telephone switches, T-switches or telecoils. An inductive device does not receive or amplify aural sound waves; it picks up signals carried on a changing electro-magnetic field emitted by the telephone receiver. Many hearing aid users are able to conduct a normal telephone conversation with such inductive coupling. In fact, they may be able to understand speech over a telephone more easily than they would be able to hear a conversation using auditory (sound) coupling. Therefore, compatible telephone which emit a sufficient electro-magnetic leakage to allow inductive coupling have been of enormous benefit to hearing aid users.

S. 604 is necessary now, because changing marketing and manufacturing process by the telecommunications industry are reducing the number of telephone units that are compatible with hearing aids. The newer models do not emit a sufficient electro-magnetic field to allow inductive coupling. Increased deregulation of telephone terminal equipment sales by the F.C.C. will result in the import, manufacture and sale of large number of incompatible telephones.

Unless Congress acts now, we fear that hearing aid users will soon be unable to find compatible telephones.

In a world so heavily dependent on telecommunication, the consequences of large numbers of incompatible telephones will be devastating.

(1) Many jobs require the use of the telephone. Without compatible telephones, hard of hearing people will face a loss of employment opportunity. Hearing-impaired persons, like other handicapped citizens, suffer greatly from discrimination in employment.[1] Congress has already acknowledged this concern. This was a pri-

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*This statement was prepared with the assistance of Sarah Geer and Sy DuBow of the National Center for Law and the Deaf.

[1] *See* Senate report accompanying the Rehabilitation Act Amendments of 1974, S. Rep. No. 1297, 93rd Cong., 2d Sess. 34 (1974), reprinted in 1974 U.S. Code Cong. and Ad News 6400.

mary reason for the adoption of the Rehabilitation Act of 1973, which prohibits job discrimination by the federal government,[2] by federal contractors,[3] and by recipients of federal financial assistance.[4] This law has not eradicated employment discrimination, however. A number of studies indicate that hearing-impaired persons suffer underemployment and lower incomes due to their disabilities,[5] and it is particularly disturbing to note that the most recent studies show a significantly greater economic decline for deaf persons, relative to the rest of the population.[6]

This is relevant here because inability to use the telephone is frequently given as a reason not be hire a deaf or hard of hearing person. As fewer and fewer hearing aid users can use the telephone, this situation can only get worse. People who can now get jobs because they can use the telephone will find themselves increasingly closed off from employment opportunities.

(2) Emergency situations are the most dramatic and easily visualized consequence of incompatibility. When there is a sudden illness or change of plans away from home, during periods of hospitalization, or when stranded in transit, a hearing aid used may not be able to get help or establish communication if s/he can't locate a compatible telephone.

(3) But more generally, telephone incompatibility will create isolation in all aspects of the hearing aid user's life, including social and commercial communications.

Inability to use the telephone system severely handicaps hearing-impaired people in daily activities which others take for granted, including the ability to communicate with family, friends, employers, businesses, government, and public services.

If a person cannot use a telephone, the alternative is often physical travel. This is clearly inefficient and wasteful of energy. In addition, physical travel may often be impossible for young persons, for handicapped persons, and especially for the many elderly people who rely on hearing aids.

The telephone industry has argued that it can meet the needs of hearing aid users adequately by providing compatible receiver units to customers "on request." However, such a policy has already proved to be far from satisfactory. In the first place, few hearing aid users are aware of the fact that their hearing aids use inductive coupling in the telephone switch mode. They do not understand why they can hear over some telephones, but not over others. Therefore, they do not know how to request or to select a compatible telephone. In addition, few telephone service personnel have any understanding of the mechanics of compatibility with hearing aids. When a request is made for a telephone that is "compatible" with a hearing aid, most telephone sales personnel will offer an amplified telephone. Even if a hearing aid user does understand that not all telephones are compatible, the consumer cannot depend on locating a compatible unit. This problem is particularly acute in some regions of the country, with some models or types telephone receivers, and with imported telephone units or units not manufactured by Western Electric.

The most serious failing of the "on request" policy is that hearing-impaired customers will be unable to depend on finding a telephone they can use, anywhere except in their own homes. As fewer and fewer telephones will be compatible, this problem will be greatly exascerbated. At a friend's home, in a store, when traveling, on business appointments, and certainly in emergencies, hearing aid users may find themselves completely unable to use the telephone system. Even if a worker requests a compatible telephone for his or her desk or work station, other telephones in the office will not be usable, and a simple transfer of desks or offices could require service calls, confusion and inconvenience until an adjustment of the compatible unit has been arranged.

The "on request" policy is inadequate because it is ineffective and it puts a heavy burden on hearing aid users: it limits mobility and job opportunities, and denies universal telephone access to hearing-impaired customers.

The telephone industry claims to have developed adapters that attach to telephones to make them compatible. However, these adapters are completely unsatis-

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[2] U.S.C. 791.
[3] U.S.C. 793.
[4] 29 U.S.C. 794.
[5] See, e.g. Schein and Delk, the Deaf Population of the United States (1974); S. Fisher, An Assessment of the Occupational Status and Training of Former Model Post-Secondary Deaf Students (1974) (an unpublished thesis at Gallaudet College); A. Crammatte, The Formidable Peaks: A Study of Deaf People in Professional Employment (1965); H. Kronenberg and G. Blake, Young Deaf Adults: An Occupational Survey (1965); E. Boatner, E. Stuckless, and Moores, Occupational Status of the Young Deaf Adult of New England and the Need and Demand for a Regional Technical Vocational Training Center (1964).
[6] J. Schein, Economic Status of Deaf Adults (1978) (unpublished study).

factory to most hearing aid users. Our members who have tried the Western Electric 100A Adapter (Coupler) report that it does not work reliably. In addition, it is bulky and awkward, and difficult to attach to the telephone receiver. This is especially true of some of the newer designer telephones that are most likely to be incompatible with hearing aids. An adapter is an additional expense and burden on hearing-impaired customers.

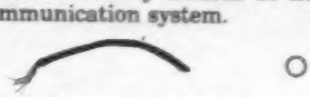
S. 604 will not lock telephone engineering and manufacturing into an obsolete technology. There is nothing obsolete about a telephone design that allows hearing-impaired persons to use a telephone, without interfering with conventional sound production. The bill simply requires telephone designers, manufacturers and sellers to take the needs of hearing-impaired customers into account, when making technological improvements in the design and manufacture of telephone equipment. The industry would not be "locked in" to the telecoil or any other particular device: all that the bill requires is some mechanism that would allow inductive coupling.

S. 604 is a reasonable response to both the needs of hearing-impaired customers and the telephone industry. It simply requires that telephones be designed and manufactured to permit telephone reception through inductive coupling. It does not require expensive retrofitting of any existing telephones. It does not require expensive research or testing of new equipment, since simple technology exists now to make telephone receivers compatible with inductive hearing aids.

The costs of compliance with this bill are quite small, while the benefits to hearing-impaired customers, and to all the persons with whom they communicate on the telephone, are incalcuable. Universal access to the telephone system has been an unequivocal Congressional mandate since enactment of the Communication Act of 1934. Section 151 states the purposes underlying the Act:

To make available, so far as possible, to all the people of the United States a rapid, efficient nationwide * * * communication service with adequate facilities at reasonable charges.[7]

Everyone in the country benefits from the capacity to communicate over the telephone with everyone else, and it is a long-standing national policy that we should all have access to the telephone system. Hearing aid users need compatible telephones in order to have meaningful access to telephone service. But the Federal Communication Commission has been unwilling to adopt technical standards in this area without a push from Congress. It is up to Congress to use its Commerce Clause authority to enter this area. Therefore, we ask you to vote favorably on S. 604, which will assure that many citizens do not lose this important tool—access to the national telecommunication system.



[7] 47 U.S.C. 151